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A professional journal published by the Society of American Foresters and devoted to all branches of forestry

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# JOURNAL of FORESTRY

VOL. XXVII

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## EDITORIAL

### THE SOCIETY PROGRESSES

**T**HOSE who were fortunate enough to participate in the annual meeting of the Society of American Foresters in New York on December 28 and 29, 1928, must have taken heart at the spirit which prevailed. Ample evidence was offered that at last the Society is really beginning to find itself. Reports of projects already under way and plans for the future indicated increased activity in many directions. Best of all, the discussions of such a live and controversial subject as industrial forestry were marked by an earnestness, a frankness, and a vigor, and at the same time by a tolerance, which augur well for early agreement on a constructive program of Society action.

Of the many important developments at the annual meeting, two perhaps stand out as deserving of special notice. The first of these was the appointment of a committee "to consider the problems presented in maintaining the productivity of the forest lands of the United States, and to devise and recommend for consideration and action by the Society policies adequate to meet these problems." This is a big order. Its significance, however, lies less in its size than in its proof that the Society has the vision to realize that active and intelligent leadership is

urgently needed to direct the development of forestry along sound and constructive lines, and that it has the courage and the confidence to attempt to supply that leadership. It is well to remember, however, that the appointment of a committee by itself solves no problems and commits the Society to no definite policy. The acid test of our sincerity and of our mettle will lie in the ability of the committee to propose and of the Society as a whole to adopt a constructive program which does not confine itself to palliatives but goes to the very heart of the forest problem.

The second outstanding action was the practically unanimous request on the Council "to consider at as early a date as possible a plan for employing a paid forester-secretary." This definite request for the first time commits a large and representative group of the Society to a policy which has for some time been urged by the Council but which the membership as a whole has been slow to accept. There can be no doubt that this change in attitude represents a growing appreciation of the opportunity for Society leadership and of the need of adequate organization in making that leadership effective. If the various resolutions adopted and the various projects approved at the annual meeting are to

represent more than an idle gesture, the need of an executive officer to assist in carrying them out is imperative. Who, after hearing or reading President Butler's stirring address, can doubt that the opportunity for constructive service of a high order is ours if we will but grasp it?

To do this requires the active interest and coöperation of the entire membership of the Society. We cannot delegate responsibility entirely to the Council, executive secretaries, or committees, and at the same time expect the Society to exert its full influence. Every member, no mat-


ter how humble his position, has an opportunity to do his part through participation in Section activities, through the presentation of facts and the expression of opinions in the JOURNAL OF FORESTRY, and through moral and financial support of the Society. With such coöperation the Society can occupy position and exercise an influence in keeping with the dignity and importance of the profession it represents. An excellent start in this direction has been made. Each of us during the coming month can help make the possibility a reality.



# BATTLE FRONTS OF FORESTRY<sup>1</sup>

By OVID M. BUTLER

*President, Society of American Foresters*

WENTY-EIGHT years have passed since this Society came into being. During that period forestry has fought many a good fight. That it has won ground in all directions is too well-known to need elaboration here. Public recognition of its need, federal and state participation in large forest undertakings, industrial acceptance of forest management by individuals and corporations, a formidable code of forest laws on our statute books, vast sums spent annually by private and public agencies, forest schools in many sections of our country, are impressive evidence of victories won and progress made. But let no forester lull himself into the complacent belief that the fighting days of forestry are of the past. Forestry has not yet reached the halfway point in America. Continuing progress is today a challenge to effort and leadership no less great than was the challenge thirty years ago.

Individually and professionally we are inseparable parts of the greatest industrial and scientific age in the world's history. Dynamic changes in human knowledge and action are taking place. Battle lines of progress are constantly shifting. The vigor and alertness of every profession is under test. Whatever may have been our conceptions one or two decades ago, forestry today calls for more than the technique of growing crops of timber.

Forces outside the forest, no less than forces within the forest, must have our concern because they may make or break the profession. To ignore the outside forces would be as disastrous as the old theory of the lumberman that the province of his industry was merely to saw wood. On every hand, the contacts of forestry wire us into the social and industrial world, and those contacts must be welded with intelligent leadership if we would assure our profession its rightful place in the great power house of American life and thought.

I believe that we as foresters cannot longer fail or refuse to face this fact. Forestry is not self-supporting nor self-sufficient unto itself. It is a part of the whole and not the whole problem of land use. Out of that complex, unformulated whole are coming changes and influences that bear directly and deeply upon the outward and inward spread of forestry. They are transforming old problems into new forms and giving rise to new problems that press for solution. Scarcely a decade ago forestry was the form and substance of conservation. Within the past decade we have seen the state and national park movement gather headway and take a forward place in the conservation forum. Within the same period we have witnessed a great diverse movement for game and wild life conservation; we have seen recreation climb upon four wheels and propel itself fifty million strong into our very working plans. We

<sup>1</sup> Presidential address delivered at the annual meeting of the Society of American Foresters, New York, December 28, 1928.



have seen science and competition alter old standards of wood utilization and backwash into forestry practice in the woods. These interlocking movements typify others of lesser scope which are changing, often with bewildering rapidity, our battle fronts of progress and growth and are bringing to bear upon the problem of forest land use a complexity of thought and action that calls for intelligent direction.

No forward-moving forester will turn his back upon such movements as these. They are part and parcel of forestry in its larger human and economic aspects. Ignored, misled, and viewed with antagonism they may become enemies that confuse and bar the progress of forestry. But viewed as partners in the great problem of land use and wisely led and directed they may become friends that will give unbounded help in the solution of the complex problems with which our profession is today confronted. The melting pot of American forest land use is as real for us as the American melting pot of humanity, and at the council table at which busy men and women are seeking to work out this problem along sound lines of highest service to all our profession must have vigorous and personal representation.

I believe it will not be denied that the manner in which coördinated land use is worked out in this country will determine the form, size, and character of our ultimate systems of state and national forests. And let me say that that is of no small consideration to every member of our profession, be he a private or a public service forester. It is well that we bear in mind that the creation of the national forests first planted forestry in a large way in American soil and in the con-

sciousness of the American people. As forestry stands today, the national forests and the state forests which have followed them are forestry's best anchor in the United States. Here forestry is of the soil and not of the word. To enlarge these forests, to protect and develop them so that they may have their proper size and place in the coördinated land use pattern of the future, is a battle front on which our profession should not be found wanting.

That adequate progress on this front is not being made we will all admit. A substantial program of land acquisition for national forests in the East has been short-circuited. The present system of state forests is pitifully small and public sentiment for state forests is in many states a cold wire. By and large, public sentiment is more aroused for state parks than for state forests, and in a number of states projected systems of state parks are more forward-looking and more concretely outlined than are those for state forests. As this Society is now functioning it is lacking in leadership in this tremendously important field of state and national forest acquisition. So far as I have been able to find, it has no large or clear-cut conception of the extent to which these systems should be expanded or the part they must play in forest reclamation, flood control, or the whole scheme of land utilization. It is to be hoped that in our discussion tomorrow, our program of ingrowing silence will give way to one that will do honor to the vision and the constructive planning of American foresters.

Our arch enemy, fire, still lays its annual toll upon thirty million acres of forestry's domain. I do not subscribe to the theory that forestry is ninety per cent



fire protection or anywhere near that, but I do hold that so long as fire goes unwhipped, forestry is whipped in great sections of our country. No man familiar with the fact can be unmindful of or ungrateful for the vast amount of thought, effort, and money that has gone into this undertaking. Immeasurable credit is due those men and agencies both within and without the profession who are mastering the technique of fire protection on the ground. Would that the solution of the problem lay wholly at that end, but as every forester knows it does not. Ultimate victory will turn upon the support which one hundred million people back of the line will give in minds and money to the task of outlawing fire. No real forester can grow cold in his determination to achieve that objective. A professional complacency which says to the public, "Give us fire protection and we will give you forestry," must have no place in our ranks.

Our job is to drive fire out of the woods and with unrelenting leadership and everlasting energy to drive it into the consciousness of the American people. On this front we may well turn the searchlight upon ourselves and expose our unorganized flanks. The fire protective systems of the federal government and of practically every state are woefully inadequate. What organized help are we giving the state foresters, for example, in their uphill fights to win public support for forest fire protection? We should be the clearing house of fire facts, but where is our loud speaker with its national hook-up? If we would beat fire in the woods, we cannot neglect the sources from which it comes.

Neither can we as a profession acquire the complacent state of mind which as-

sumes that industrial forestry is the inevitable result of the working out of economic forces. Science and competition may upset calculations on that score. Furthermore, it would be a sad commentary upon our spirit and our ability to have it said that commercial forestry could justify itself in America only by permitting the forests to be destroyed and dire economic want to be created. Except fire, industrial forestry is today the largest and most important problem now pressing for constructive handling and leadership by our profession. It is an opportunity no less than a challenge which must be successfully met if the outward spread of forestry now feeling its way is to place our profession alongside other great professions in the industrial and scientific world. But we shall never solve or even contribute to the solution of the multiplicity of problems with which industrial forestry is bound by ignoring the facts or by submerging those facts in futile arguments behind the four walls of our meeting rooms.

We know that our capital stock is steadily and swiftly on the decline; that destructive cutting goes on apace; that repeated fires on cut-over lands are driving millions of acres out of the realm of commercial forestry; that over-production in the West and competition everywhere is stifling private forestry in the East. We know that the primary forest industries which forestry must serve are in a bad way. We know that forest taxation has not been successfully solved. We know that cut-over lands are massing as state and national liabilities. In short, we know that the present state of affairs in the forest world is as critical and as far-reaching as so-called farm relief, flood control, or national preparedness. Well



we may ask ourselves what is our Society doing about it.

There is no over-night cure for the ills of forestry or the lumber industry. We face a complexity of problems each of which must be dealt with, if dealt with successfully, in relation to the whole problem and its contacts with American life and industry. Half-baked schemes that would prostrate one industry and favor another will not suffice. I would not be understood as belittling the co-operative principle of relief. On the contrary, I think that it offers the proper approach because private forestry to be successful must first of all have the interest and active participation of the private landowner and behind him the interest and intelligent support of the American public. But I do say that the co-operative principle as now in the working, commendable though it is, lacks the magnitude and the political and industrial statesmanship to even greatly interest the American public. We commend ourselves on the passage of basic forest laws that I would in no way disparage excepting in their failure to reflect the size and urgency of the task ahead. But neither we foresters nor the lumbermen nor the federal government nor any other agency have a program of relief at all adequate to the needs. So long as we dally with the forest situation we cannot expect Congress or the public to do more than dally with it. It is a situation that can be permanently and successfully relieved only by national handling, and until it is laid before the American public in the same way that farm relief and other great economic problems are dramatized for solution, real progress appeals to me as far-removed.

This calls for constructive leadership of the highest type—a leadership that will accurately and intelligently define the problem and bring to bear upon it the best minds and the best efforts of the business and professional world. Approached by all concerned in a spirit of open co-operation and constructive determination to arrive at sound remedies for the forest industries and American business in general have nothing to lose and everything to gain. With three-quarters of our forest lands in private ownership, industrial forestry offers the greatest field of private endeavor for the profession of forestry. It is a field in which the state and federal government can and must help, but they should not preempt that field in any way that would lessen its opportunities for private initiative and professional service. Industrial forestry must maintain an economic industry and maintain it in a reasonably prosperous condition. If the profession of forestry has not the faith or courage to take leadership in its own field of service, then I fear very much that the private foresters of the future will be merely a hired man at small salary on the outskirts of logging operations. And if we would lead, we must demonstrate our capacity for leadership and our ability to bring about conditions that will take industrial forestry out of the experimental category into the business world of sound investments.

In the discussions which are to follow, industrial forestry will be dealt with in detail and the report of our committee on industrial forestry will be presented. I want to take this opportunity to thank the members of the committee in behalf of the Society for the time and effort which they have given to the study and to express the hope that as a result of



their work and our deliberation here, there will come a real determination on the part of this Society to take definite and courageous leadership in a field where constructive leadership is so urgently needed.

It has been said that the forest optimist is he who sees what has been done and that the forest pessimist is he who sees what remains to be done. If that means that the optimist would do nothing more than is now being done, then it is better that we bear the mantle of the pessimist, see clearly the job before us, and tackle it with a determination to give it the best that is in us. This Society can function if it wills to function. That is the first essential—the will of our individual members to have the Society stand as its dynamo of leadership. The second essential is the formulation of a definite and clear-cut program that encompasses the task before us. And the third essential is an organization force with which to function. My experience as President of the Society during the past year and with organization work during the past six years has convinced me that no organization can acquire or hold a position of forcible leadership if dependent upon the contributed time of a few members. We have argued the question of a paid secretary, or director, or whatever you may

care to call him, and like most of our debates the question has been left *status quo*. We have, however, increased our dues in order that the Society may better represent our profession, and as the reports of the Secretary and Treasurer will show we are in a favorable position to consider definite ways and means by which we can provide our Society with a functioning personnel. I have asked Mr. Shepard to present this question tomorrow and I strongly recommend that definite action be taken looking to the employment of the ablest forester within our reach.

In what has been said, only three fields of opportunity and responsibility have been mentioned. Time does not permit a similar discussion of forest research, forest education, forest utilization, and forest diseases and insects. They are no less important, no less challenging. And yet, the question has been raised "What is there for a secretary of the Society to do?" If it is the will of our members that the Society function in the future as in the past, then there is little for him to do. But if it is our will to take a position of aggressive leadership in the many fields in which our professional leadership is at stake, there can be no forester among us who will fail to see the forest because of the trees.

# THE ANACHRONISM OF FOREST DESTRUCTION

BY WARD SHEPARD

*Forest Inspector, U. S. Forest Service, Washington, D. C.*



WE ARE reaching the end of an epoch of our forest history. The decade 1919-1928 represents a long forward step to achieve a more comprehensive solution of the forest problem than was afforded by public forestry. Beginning with a positive and formidable sweep for the drastic use of the police power to stop forest destruction, it ended with an oblique attack on this baffling evil—the attack by means of public and private coöperation. This central movement of the decade, expressed in the Clarke-McNary Law, is flanked by two other important contributions—a large extension of the potential field of national forest acquisition and the creation of an organic national program of forest research. These enactments embody, in part at least, the major proposals of the National Forestry Program Committee, and they can be said to embody, if not the ideals, at least the achievements of the forestry renaissance of 1918.

Unless all signs fail, we are on the verge of a new forestry renaissance. In this world of change nothing is ever static, least of all the things that are endowed with the vital spark of life. The forestry movement cannot rest satisfied with the great achievements of the past decade. It must march relentlessly, patiently, courageously toward its ever fixed goal—the extirpation of the evil of forest destruction.

Forest destruction must be stopped.

If it can be stopped by a larger program of coöperation, let us work aggressively for such a program.

If it can be stopped only by some form of public regulation, let us by all means work for a just program of regulation.

But let us not get confused in side issues and in minor objectives. Let us keep headed in the direction of the great objective and let us move toward it in as straight a line as possible.

Forest destruction is incompatible with civilization. It is an anachronism in the midst of the creative spirit of the twentieth century. Public security demands that it cease. Consequently the problem must be viewed not wholly, or even predominantly, from the standpoint of the rights of the relatively small number of people who own the bulk of the forest land of the United States, important as those rights are; but from the standpoint of the rights and security of the hundreds of millions in the unborn generations who will inherit the wreckage of a great forest empire.

The responsibility of the forestry profession in this problem is clear. In a sense it is the agent of the American people for doing whatever may be done to safeguard our forests. It is the duty of the forestry profession, first, to ascertain and present to the whole people and especially to the President, the Congress, and the governors and legislatures of the states all the facts without fear or suppression.



Still more, it is the duty of the profession to explore all possible solutions and to lay these possible solutions before the responsible representatives of the people. It is not the function of the profession to prejudge any solution that holds any possibility of success. Specifically it is not its function to assume that any type of public regulation of forest destruction is out of the question. It is the prerogative of the American people, through its elected representatives, to decide for or against the question of public control in a matter so fraught with grave consequences as continued forest destruction.

The basic principle of the coöperative forestry movement is the removal of obstacles to the private practice of forestry through public assistance in fire protection, tax reform, etc. It presupposes that with these and other forms of encouragement, given not as subsidies to private citizens but as a means of safeguarding the public interest in a natural resource, industrial forestry will be a major contribution to the solution of the forest problem. Indeed, not only coöperative fire protection but even the public forest purchase program itself is founded on this assumption, because in general the purchase program goes on the principle of the public acquiring the less desirable cut-over land on the hypothesis that private forestry will put the better land under management.

There is thus a large and, to my mind, dangerous element of *laissez faire* in the coöperative program as developed to date. It is founded on the assumption that, with certain forms of public assistance, natural economic evolution will bring about a large voluntary contribution by private landowners to the solution of the forest problem. All the evidence we have

indicates that in spite of admirable progress on the part of some owners, private forestry is making extremely slow progress; and there are reasons for the gravest doubt whether by the remotest possibility private forestry, if left largely to itself, can be got into operation in sufficient time and on a large enough scale to avert forest catastrophe. Even if forestry were a field admirably adapted to private enterprise, with everything in its favor and nothing against it, we must admit that the forest industries are not in a frame of mind to take an aggressive and voluntary leadership, without pretty active government intervention and assistance, for a major contribution to the solution of the forestry problem. They are confronted with difficult financial and economic problems—overproduction, overcompetition, overcapacity; high carrying charges; substitutes; inadequate merchandizing; long freight hauls; heavy waste of low grade material. Liquidation is their dominant motive, overproduction their chronic ill.

On the other hand, the rapid voluntary adoption of a large forestry program would presuppose freedom from such difficulties and the immediate concentration of a high degree of vision, imagination, and intelligence on a constructive forestry program. To base our forestry edifice on such an assumption and on such a foundation of *laissez faire* is a dangerous gamble. It ignores on the one hand the slow progress of private forestry and on the other the patent fact that immense quantities of cut-over and devastated land are on the road to abandonment to the public.

There is no evidence anywhere in the world that private enterprise based on the unrestricted use of private property is

able to cope with the problem of maintaining sufficient productive forests for the needs of modern civilization. The forest problem throughout the world is in a state of flux<sup>1</sup> and evolution, with every reason to suppose that entirely new and unprecedented social institutions will have to be created to deal with forest destruction. This state of flux is clearly indicated in the United States by the widespread policy of clear cutting and land abandonment which in many cases has made forest land "ownership" little more than a temporary privilege of harvesting the timber, and which is the strongest possible proof of the inability of private ownership to deal with the problem without public intervention.

The time is ripe for a renewed attack on the problem of forest destruction. The possibilities of coöperative attack have by no means been exhausted. But co-operation must not be confused with *laissez faire*. If private interests alone were at stake, they could be allowed to work out their own problems on the let-alone principle. But since an immense public interest is at stake, all the elements of *laissez faire* in the present program must be replaced by a program of aggressive, positive, creative coöperation, in which both the public and the private forest owners assume the full measure of responsibility demanded by the maintenance of public security and national welfare. Insufficient organized effort exists on the part of the Government or other forestry agencies to induce operators to take a positive interest in constructive forestry, much less to undertake the arduous and difficult analysis necessary to determine the feasibility of forestry practice on their own holdings. Probably not five per cent of the forest owners

of the country are even conscious of the need to consider and investigate better forest practices. Except in the important fields of fire protection and farm forestry there is a pretty complete dearth of any effective machinery to make a genuine, honest, workable coöperation in the many phases of improved forest practices which should now be put into effect.

Specifically, it is essential that forest owners—and especially that the major forest owners who control extensive holdings—coöperate with public agencies in working out and applying definite measures for the control of destructive logging. That most devastating agent, the logging fire, must be extirpated. That destructive practice of burning cut-over land, with whatever promise of a future forest crop it holds, to protect standing timber and logging equipment must be stopped. The menace of unregulated slashings must be abolished. Logging methods and logging machinery must be modified to safeguard young trees and residual mature trees from destruction during or after logging. Positive measures for assuring reseedling must be adopted.

On the other hand, there is a large field for government assistance and advice in working out some of the economic and financial difficulties of the lumber industry. As I pointed out in the *JOURNAL*<sup>1</sup> in 1927, it is not far-fetched in an age of tariff protection and farm relief, to visualize a program of "forest relief"; and to conceive that because of the close relation between high carrying charges, overproduction of lumber, and the wasteful and destructive exploitation

<sup>1</sup> *JOURNAL OF FORESTRY*, Vol. XXV, No. 1, January, 1927, "The Necessity for Realism in Forestry Propaganda" by Ward Shepard.



of forests, the public would be justified in making concessions in the direction of controlled production and amalgamation and in assisting the forest industries to organize better credit facilities in return for the abolition of destructive forest practices.

These are merely indications of the kinds of subjects which must be attacked in a far-reaching joint enterprise by Government and forest owners. The Government should take the lead in working out machinery for continuous consideration of these problems, for continuous contact with industries, for a serious, earnest, and genuine effort to reach solutions. In the great study of minimum measures needed to keep forest land productive, now being published by the Forest Service in the series of "Timber Growing and Logging Practice" reports, the foundation has been fully laid for a joint attack on many of the destructive practices still current in our forest industries.

It is inevitable that unless such a co-operative attack is able to end these destructive practices, and to put into general effect measures for keeping forest lands at least in a productive condition pending their allocation to positive forest management under either private or public ownership, the public must more actively and drastically intervene on behalf of the general welfare and security.

It is time that public agencies should undertake an adequate and dispassionate analysis of the need and feasibility of public regulation of destructive forest practices. Hitherto, the approach to the problem of regulation has been somewhat hysterical both on the part of industry and of foresters. Yet, in an allied field of conservation, we find the Federal Oil Conservation Board calmly considering

regulation as a possible means of conserving the oil supply. In appointing the Board, the President, while not dealing with the subject of regulation, pointed out the large public importance of the problem. He said: "The oil industry itself might be permitted to determine its own future. That future might be left to the simple working of the law of supply and demand but for the patent fact that the oil industry's welfare is so intimately linked with the industrial prosperity and safety of the whole people, that Government and business can well join forces to work out this problem of practical conservation." The Federal Oil Conservation Board itself seems to take for granted the right of public regulation to prevent waste. In its report of 1926, it says: "The authority of the state to prevent the waste of natural gas has already been declared." Elsewhere it says: "The right of the state to prevent the waste of natural resources is rendered more important in this matter by the newly discovered or at least more widely recognized facts regarding the rôle of gas in the oil sands."

And the Committee of Nine, appointed by the Board from among the members of the oil industry itself, directly advocate legislation to prevent the waste of gas.

The possible application of the regulatory principle to the forest problem should be thoroughly explored, and the various possible means of regulation studied, including regulatory legislation of other countries. It is possible that a thorough overhauling of the forest situation will reveal the immediate need of regulatory measures to protect the public welfare. Such an inquiry should determine also, as exactly as possible, the

financial effect of various measures of regulation on the forest industries and the possibility of recovering any cost attendant on regulation from the general public through increased prices of lumber, through more extensive public coöperation, through subsidies, or through other means. Especially, we should close our ears to the suggestion that any and all forms of regulation, from coöperative self-regulation to national federal regulation, would necessarily spell disaster to forest owners. It is conceivable, in fact, that a just and fair scheme of regulation, in the form of "compulsory coöperation," with the public bearing its full share of the burden and with full industrial participation, so far from being disastrous, would be a rejuvenating force to the lumber industry and assure it a permanent and constructive development. It is significant that in Sweden the forest industries are, in general, among the strongest supporters of public regulation of forest destruction and that control of devastating forest fires has been achieved only through ending destructive lumbering.

The Society of American Foresters could make a splendid contribution to forest policy by undertaking such a study of regulation as outlined above, obtaining the assistance and opinions of outstanding and socially minded legal advisers.

While giving serious thought to ways and means of public control, we should at the same time seek a large extension of the coöperative forestry movement. It must be lifted out of the present level of

*laissez faire* into a more dynamic program of action for ending forest destruction. The doctrine of *laissez faire* as applied to forest destruction is the doctrine of drift and passivity. It is a denial of the creative power of the human mind, of the controlling energy of the human will. If our forests continue to be destroyed in the future as they have been destroyed in the past, they will be victims of default of imagination, of intelligence, and of courage, and failure of government to protect its citizens from an economic waste of the first magnitude. For a nation so gifted with economic talent as America, such default and such failures are unthinkable.

The time is ready for a more thoroughgoing and searching public examination of the forest problem and more far-reaching and better coöordinated measures to end forest destruction than have hitherto been attempted. The salvaging of one-fourth of the land area of the United States for the cultural processes of civilization is a subject worthy of the highest intelligence. There is abundant public opinion to support such a movement; the great need is to create a channel through which its force can be directed. A step in this direction could well be taken through the creation by the government of a National Commission, with ample power and funds to make a fresh appraisal of every public and private phase of forestry and to draw up a forestry program proportionate to the power, the wealth, the dignity, and the creative spirit of America.



# SOME OF THE PRINCIPLES INVOLVED IN DEALING WITH THE PRESENT FOREST SITUATION IN THE UNITED STATES

By BARRINGTON MOORE

*Washington, D. C.*

**F**ORESTERS all know that most of the private forest lands of the United States are at present being handled without the slightest regard to future productivity or to the public interest in maintaining taxable values. Forests containing merchantable timber are protected from fire until they can be reached by the axe. Then they are wrecked by ruthless cutting, and abandoned to fire. Whatever may, by chance, have been left in the way of advance reproduction of unmerchantable trees which might have furnished seed, is wiped out, and the land is left a barren waste. Frequently even the surface humus is burned off, leaving bare rock or sterile sand which will require many centuries to pass through the slow stages of vegetative succession before the forest can be restored.

About the *facts* there is no difference of opinion among foresters. About the *rate* at which private owners are improving their methods, and the possibility of remedy through a continuation of the present dependence on enlightened self-interest, there are various shades of opinion. Outside of the forestry profession, the general impression seems to be that while forest denudation used to be pretty generally practiced, the lumbermen have, on their own initiative, abandoned timber mining and turned to timber crop-

ping as being more profitable. The manner in which the public received this false impression need not be considered here.

A discussion of remedies is beyond the scope of this paper. Attention will be confined to outlining briefly some of the principles which seem to require consideration in any remedial plan.

We hear a great deal about the purely economic aspects of forestry; that it must pay a profit. Of course timber growing is an economic problem, and private individuals will grow timber only when they can see reasonable assurance of a profit in it. But the problem involves more than the mere working out of economic forces. It involves the public interest. Is not the public affected by the ruthless cutting and burning of forests? How about the loss of taxable values in counties with relatively little farm land? How about the farmer who could eke out a living from his farm when he had work for himself and his teams in the woods, but cannot depend on his farm alone, and is starved out when the forest is destroyed? Cases of the kind are numerous all over the country. In France during the war, the American forestry troops, in obtaining softwood lumber for barracks, warehouses, and other urgent needs of the army, anticipated the annual cut for sev-

eral years ahead in the forests of the Landes, though by no means destroying the forests. The small farmers living here and there throughout the region, dependent on woods work as well as on their farms, were so seriously affected, and abandoned their land to such an extent, that the French Government appointed a commission to consider the matter, and even contemplated stopping or heavily curtailing the American operations in spite of the urgent need of our army for the wood.

The conclusion is inescapable that the public has an interest in private forest lands, except for the smaller tracts on the farms, the woodlots. It is a recognized principle that the rights of the owner of private property may be exercised freely so long as the property and welfare of others are not adversely affected. But the moment any form of use becomes detrimental to other individuals or to the community, the public has not only the right, but the duty to prevent such form of use, economic considerations notwithstanding. In all questions involving the public interest and the profits of an individual, the public interest must come first. This applies not only to the use of private property, but to the actions of the individual. Freedom in the use of private property, and freedom of action, are possible only within the limits set by the public interest. Innumerable examples could be cited, and many will occur to the reader. Suffice it to mention the zoning laws in larger cities, which prevent owners from erecting buildings that would cut off their neighbor's light and air, and from building factories in residential districts. The regulations of the fire department in some cities are very strict as to exits, methods of con-

struction, wiring, gas mains, facilities for cooking, and a number of other matters. Even the size of rooms, arrangement of doors and corridors, and so forth, are regulated. Public control of private property has been carried furthest in cities simply because the possibilities of adversely affecting others is greatest in cities. But it is by no means confined to cities, and may include private property wherever situated. In other civilized countries containing large amounts of forest wealth, such as Sweden and France, public control has been extended to cover private forests.

It has often been stated that enlightened self-interest will eventually bring about the practice of forestry on private lands. Unquestionably it should be fostered and encouraged in every possible legitimate way. But enlightened self-interest never willingly foregoes profits. It has been found that, where the public welfare is involved, enlightened self-interest does not insure adequate protection. Consider, for instance, the railroads and other public utilities, and the manufacture of food products. In some matters, the majority of people will voluntarily act in such a way as not to adversely affect the welfare of others. Examples are ordinary business dealings and contracts, though even here the law stands in the background, affording protection against intentional or unintentional delinquencies. In other matters, a large number, when left to their own devices, injuriously affect others. Examples are the pollution of streams by manufacturing and other wastes, and the taking of more than one's share of game and fish. Even in matters in which the normal reasonable person would not transgress the rights of others, there is



always a small number of selfish and unscrupulous persons willing, if allowed, to take an unfair advantage, and gain their ends regardless of the effect on the community. It is to protect ourselves against such persons that most of our laws, and our police, exist.

Let us assume for a moment that economic conditions have finally become such as to permit a profit to be made from the practice of forestry on private lands throughout the United States. No matter how far away that day may seem to some of us, let us assume that it has come. Let us assume also that this condition has developed without any public supervision or control of cutting on private lands. What will be the resulting situation? The obvious answer is, private owners will be practicing forestry. But let us stop a minute and think of some of the elements in the situation, together with the experience of other countries which have already reached that enviable economic condition. In order to obtain a steady revenue from the forest, the owner must put back into it a certain portion of the gross return in the form of roads to keep timber accessible, lookout stations to reduce the fire danger, plantations to regenerate bare spots, cleanings to protect from insects and disease, and so on. The management of the forest has become a business operation with annual expenses and annual net profits. Incidentally, the bogey of compound interest will no longer frighten the timid, because the returns will be annual, as in any other business. It is only when one plants bare land and sits down to wait for the trees to mature that compound interest need cause concern. Since the area on which this will happen will never be large, we

might as well stop worrying about compound interest.

Now, suppose the owner dies, and his children need ready cash. What is to prevent them from cutting every salable stick, and wrecking the forest? This is practically sure to happen sooner or later if the public has taken no steps to forestall it. That is one of the reasons why, even in Sweden, which is thoroughly "forest-minded" and derives a large proportion of its wealth from its forests, the private owner is not allowed to handle his lands in any way he sees fit. He is not allowed to heavily overcut, much less to devastate, his property. It is significant that, even in a country in which forestry is so highly developed and widely accepted as Sweden, there still remain a small number of forest owners on whom legal compulsion has to be brought to bear to force compliance with reasonable forestry measures. It must be obvious then, that favorable economic conditions alone, without some form of public supervision and control, will not bring about the continued practice of forestry on the private lands of the United States.

Let us now abandon our assumption that economic conditions favorable to forestry exist, and revert to the present situation. There are cases in which the adoption of forestry measures saves money. Selective logging in part of the Lake States reduces the cost of logging by eliminating the losses which had been incurred on the small trees. Brush piling may reduce the cost of skidding and lower the charges for fire protection. But let us admit that, by and large, the immediate profits on an operation which leaves the forest in a productive condition will be less than the profits on an opera-

tion in a similar area which destroys the forest. Generally a certain investment is involved in leaving a growing forest on the land. Under present wholly unregulated conditions the public-spirited owner who makes this investment in the future forest is placed at a disadvantage in comparison with his more selfish and less scrupulous competitor. Men who would be willing to give their lands reasonable care have also a responsibility to their stockholders, and cannot allow an advantage to competing companies. Thus the short-sighted and unscrupulous operator sets the standard which the others must follow, and prevents the expenditure of money by the progressive operator in maintaining his forest in a productive condition. It is obvious that nothing short of public control will compel the unscrupulous operator to abandon his destructive practices, and will place every operator on an equal footing with regard to his competitors.

#### SUMMARY

The facts in the present forest situation—ruthless cutting of most private lands, fire following cutting, interest in protection mostly confined to merchantable stands—are known to all foresters. Opinions differ as to the rate at which private owners are improving the situation.

Details of remedial measures are not discussed, but a few underlying principles are presented for consideration.

The problem, while largely economic, also touches the public interest. Freedom

in the use of private property, and freedom of action, are possible only in far as they do not adversely affect the welfare of others. In all questions involving the public interest and the profit of an individual the public interest must come first. Public control is exerted over private property wherever necessary to protect the public interest, and, in highly civilized countries containing large amounts of forest wealth, is exerted over private forests.

Enlightened self-interest will not protect a community against the unscrupulous few. Well enforced laws are necessary.

Economic conditions favorable for the practice of forestry will not of themselves bring about forestry practice on private lands in the United States. Changes of ownership, and the need for ready cash, will cause forest destruction if not prevented by the public. Even in Sweden, where economic conditions and public opinion favor forestry, public control is necessary and legal compulsion occasionally has to be used.


Under present conditions in the United States, the progressive operator who invests in the future productivity of his forest lands is placed at a disadvantage in relation to his less scrupulous competitor who profits by the destruction of the forest. The short-sighted and unscrupulous therefore determine the practice which the others must follow. Public control would place all operators on an equal footing.



# SOME OBSTACLES TO INDUSTRIAL FORESTRY<sup>1</sup>

By F. W. REED

*Industrial Forester, National Lumber Manufacturers Association*

 SEVERAL TIMES in the past year men have asked me: "What is the use of this Survey of Industrial Forestry? It is impossible to get accurate and complete information, the Society lacks adequate facilities, and we cannot agree among ourselves what industrial forestry is. Even if we could agree, and had the facilities, and did succeed in compiling complete and reliable information, what good would it be to us anyhow?"

The way I look at it is this: According to our best estimates we now have left about 470 million acres of forest land in all stages of denudation and regrowth and with a considerable area still in virgin timber. Our annual consumption of wood compared with the estimated remaining stand of virgin timber plus the guessed-at annual regrowth indicates that we are using up our timber resources four times as fast as we are replacing them, and that in some 30 or 40 years we shall cease to be a wood-using civilization. To continue to be a wood-using nation it is essential, it is commonly accepted, that every acre of these 470 million acres be restored to and maintained in a condition of maximum productivity.

Some 100 million acres (a little more than 20 per cent of the total) are in national and state forests. Their future

is assured. About 370 million acres, or nearly 80 per cent, are in private ownership. Our forest problem, therefore, is 80 per cent a problem in private forestry—or, to be more exact, a question of what can or ought to be done with the private forest lands. Of these 370 million acres something like 150 million acres are in numberless small tracts, commonly called farm woodlots. Something like 220 million acres are held in large tracts, either by the forest industries themselves or by owners who expect to sell them or their timber products to the forest industries. Our forest future, therefore, is 50 per cent a question of what is going to be done with these industrial forest properties; a problem in industrial forestry.

Before we waste our time arguing for or against mandatory legislation which would force the forest owner to practice forestry for the good of the nation, or before we propose a policy of taking over into public ownership all of these industrial forest properties, or before we advocate any other visionary scheme for saving the nation its forest birthright, it is important that we know the present status of the industrial forest properties. We need to know more accurately what progress the industrial forest owners have made in introducing timber growing practices into the management of their properties; how, where, and why they have found it practicable to change over from a periodic to a sustained yield basis

<sup>1</sup> Presented at the annual meeting of the Society of American Foresters, New York, December 28, 1928.

of operation; and what promise there is for further expansion of the comparatively new business of commercial timber growing.

Hence the Society's "Inquiry into the Progress of Industrial Forestry." It has been called an Inquiry rather than a Survey in order to avoid the inference that the final results would be thoroughly complete and perfectly accurate. The information which we have compiled, however, is in my judgment far more complete and reliable than that of any previous effort, and is to that extent more useful.

When we balance the total area (8,550,000 acres) which Shirley Allen has just reported to us as being under industrial forest management against the 220 million acres which ought to be, the situation looks not so good. It gives room for the forest pessimist to have his inning and re-advocate his schemes for mandatory legislation, complete government ownership, government subsidy, or what not. When, however, we compare the present acreage with that of 10 years ago, when there was practically no industrial forestry, and realize the progress which has been made during that short period since the business of timber growing first began to be economically practicable, there is room for the optimist to step forward and paint us a glowing picture of the future in which everything will be serene and beautiful. But if he does this and we follow him, he will be leading us into a worse fix than if we follow the pessimist.

We can look forward, I am sure, to a natural expansion of industrial forestry beyond its present limits to a point where it will play a real part in insuring the nation its future timber supply. Before,

however, it can expand to the point taking in all of the 370 million acres now in private ownership, there are many obstacles to be overcome, and some of them may be insuperable.

It would be well to consider some of these obstacles, not with the eyes of the pessimist, nor with those of the optimist, but, as nearly as is humanly possible, in the true scientific spirit in order to understand them and be that much better prepared to devise ways and means for overcoming them.

The well-known obstacles of fire and taxes I am passing over, because their importance is already recognized and they are already at work upon them.

Next to them is the growing capacity of the land, or rather our ignorance concerning it. Some prominent foresters have argued that no land can grow timber fast enough to pay dividends, and that the only answer is complete public ownership or government subsidy. They are refuted by the facts. Some forest owners have already found out that their land will grow timber fast enough to pay profit and are making their plans accordingly. Other prominent foresters, from their advocacy of mandatory legislation seem to assume that all of our 370 million acres of private forest land will grow timber profitably and that the owner wilfully refusing to take advantage of his opportunities. It takes very little research on the part of any of us to know that certain extremely sterile types of forest land simply cannot return a monetary profit to the owner under any circumstances. Between the two extremes of positively profitable and plainly unprofitable types there is a broad doubtful zone concerning whose growing capacity we must learn a great deal more than we



now now before we can say definitely what parts of it will or will not produce timber profitably and what particular owners are losing profits, or committing crime, by failing to practice forestry; to what extent industrial forestry can be counted on to assure us our future timber needs.

After we have determined the growing capacity of the land, are reasonably certain how many cords or board feet it will produce per acre per year if properly managed, and get into the financial phases of our calculation, we are apt to run into another obstacle to profitable industrial forestry, viz., exaggerated land values due to speculation. We Americans are a speculative breed. Much of our boasted wealth has come from sudden rises in land values caused by rapid increase in population or the discovery of unexpected mineral resources. As a people it has been our habit for generations to think of the lumber industry simply as the temporary forerunner of permanent agriculture and of all forest land as potential farm land worth \$100 or more per acre. People who have grown up in our largest cities have learned to think of land in terms of house lots at prices per square foot. When they acquire wealth and branch out into the country for a summer home, or a game preserve, any price per acre looks "purely nominal" to them and they bite. They have no idea at all how much wild land there is lying around loose and how its very quantity is more than sufficient to supply their demands a hundred times over.

Even intelligent forest owners themselves who ought to, and do, know better (and I'll not except myself) carry the sneaking hope that some day they

will be able to unload at a big profit on some ignorant New York millionaire or that oil will be discovered in the neighborhood. If there were time it would be interesting to discuss the Florida boom and the effect it had in slowing down forestry progress in the southeast.

The speculative instinct has served to hold the market price of many an acre of good productive forest land well above its intrinsic forest growing value, and thus to prevent the land from being put to its one legitimate use of timber growing.

So long as people remain in ignorance of the economic principles which go to establish true land values and instead allow themselves to be bamboozled by the high pressure tactics of real estate salesmen, undoubtedly in many sections inflated values will continue to stand as an obstacle to industrial forestry and the forest lands themselves will remain idle. Fortunately there seems to be a change of late for the better. The old-fashioned phantasy, which has persisted so long in the Lake States and the South, that all forest land is potential agricultural land and can be sold by the lumberman to the farmer at \$10 or better per acre as soon as the virgin timber is removed, seems at last to be about dead. Certain large lumber companies which have tried the hardest and spent the most money in the effort to colonize their stump lands have at last realized the futility of such a policy. They now know that their cut-over holdings will return them further profits only if restored to forest productivity, and are acting accordingly. One thing that enables them to figure a profit on their reforestation undertakings is the fact that the absolute unsalability of the lands for any other purpose makes it

possible to charge them on their books with practically no value.

Closely akin to the obstacle of inflated speculative values is the ignorance of capital that timber, under the right conditions, will grow profitably. There is plenty of capital these days which is seeking investment but extremely few of those who have the handling of it know anything about the possibilities of industrial forestry. Of those who do know, an even smaller percentage have any capital with which to back their judgment.

All of the forestry propaganda of the past 25 or 30 years has had to do mainly with the public harm that will result from forest destruction and the public good that will accrue from forest conservation. The practice of forestry has been urged upon the private forest owner as a duty which he owes the public; whether or not it could be made to pay dividends on the investment seems to have been a matter of very minor consideration.

It has been difficult, therefore, for the capitalist or the forest owner to conceive of the professional forester as being anything but the idealistic advocate of a praiseworthy public cause. That he is sometimes a practically trained engineer who can render valuable assistance in planning and directing the profitable management of forest properties has been slow to take hold. The forest owner, being usually a hard-headed business man who is used to hiring assistants only if he is sure they can help him make more money, is naturally disinclined to pay for services which may amount to nothing but a homily on his public duty. The capitalist who might invest profitably in timber growing if he knew anything about it is more than apt to receive

the forester and his suggestions simply as another one of a thousand and odd schemes for separating him from his money.

Undoubtedly as time goes on capital will gradually come to know more about the possibilities of profit in timber growing and be able to compare this on its merits with other classes of investment. One can see progress as he visits the different parts of the country. But the progress which he sees seems to be far too slow to suit the impatience of some of our most enthusiastic conservationists. Maybe it is too slow to insure us against a hiatus in a nation wide sustained yield of old growth saw timber such as we have been used to obtaining from the virgin stands. Maybe our extremists are right in advocating a short cut across the path of orderly economic evolution in the shape of mandatory regulation which will force every forest owner to grow timber whether it is practicable or not. It strikes me, however, that forest owners and other business men are coming to appreciate the fact that timber grows, and sometimes may be grown profitably, about as rapidly as we professional foresters ourselves are coming to know how to do it, and a good deal faster than the fire and tax problems are being solved.

As a matter of fact numerous instances can be cited where the industrial forest owner has made a start in the business of growing new crops of timber long before the technical expert is ready with advice as to the silvicultural methods he should adopt and before the public is ready to furnish him with the fire protection he is entitled to or assurance against confiscatory taxation.

Industrial forestry like any other business thrives best where economic condi-



tions are the most favorable and where it has the strongest public support. From its very nature, it is peculiarly sensitive to adverse conditions and to opposition.

In my work of the past few months with the National Lumber Manufacturers Association I have become impressed with the fact that *public opposition* in many parts of the most important forest regions is one of the most serious obstacles which the would-be lumber grower has to meet. To many of us who have been in the forestry game for the past 20 years and more this may seem to be a strange and unwarranted statement. We have talked, eaten, and slept forestry for so long as to fall into the error of believing that everybody else has been doing the same thing and that the general public is as fully sold on the forestry proposition as we ourselves. We may be willing to admit that certain elements of the population are still apathetic on the subject, but it is hard for us to conceive that there still are people in this supposedly enlightened country of ours who commend the lumberman for destroying the forests, and condemn him, and actively oppose him, to the extent that he tries to keep his forests growing.

Whether we like it or not, it is true. In spite of our publicity work and educational campaigns of the past generation there are still too many people who hold to the opinion of our colonial ancestors that the forests are simply a nuisance whose speedy extermination is the first essential step toward civilized progress.

Industrial forestry, like any other business, needs public support in order to prosper. It must have a steady and increasing demand for its products and

moreover must have recognition on the part of the public as a desirable and essential part of our economic structure. Since industrial forestry, the business of growing timber commercially, is still a comparatively new venture, and the profits to be gained are still pretty much of a gamble, it is a business which is peculiarly sensitive to public opposition.

Instead of damning the forest owner because he fails to grow timber, perhaps we should do better to damn the public because it fails to let him. Until very recently, as time counts in the history of nations, title to forest land has given the holder few rights beyond that of paying the taxes and of cutting the timber, provided he could get there first. The public has reserved to itself the right to hunt and fish on the land, to graze its livestock upon it, and, when it chose, to burn it over.

In other words, the fee to forest land has amounted to little more than a timber easement. Under such conditions, it would hardly seem that the owner is at fault for simply cutting his timber and moving out. It would seem rather that the public is at fault for creating conditions which permit him to do nothing else.

One could continue at interminable length to enlarge upon these economic obstacles to industrial forestry until he had proved, on paper, that it can't be done. That is not my object. All of these man-made obstacles can be removed, overcome, or outgrown until the way is entirely clear for the expansion of industrial forestry to the maximum limits that natural conditions will permit so that it will play its full part in the perpetuation

of the nation's timber supply. To expedite the process, it is more important to educate the public than to damn and threaten the wicked lumberman with violence.

Too much has been said about the forest owner's duty to the public and too little about the public's duty to the forest owner. The public owes to the forest owner, in return for the taxes he

pays, the same degree of fire and police protection, of technical assistance, and of moral support, that it owes to agriculture or any other industry which is an essential part of our economic and social system.


When that service is rendered, there will be the proper time to talk about forcing the recalcitrants to handle their forests properly.



# AN EXAMPLE OF INDUSTRIAL FORESTRY IN THE ADIRONDACKS<sup>1</sup>

By HOWARD L. CHURCHILL

*Forester, Finch, Pruyn & Co., Inc.*

 FORESTS are a crop. We have known this for a long time, and now they are rapidly coming to be thought of as a crop and in some cases to be handled as such. An industrial crop is one that is cultivated. It would seem then that industrial forestry is the work of cultivating forest crops.

Just what do we mean by cultivating a crop? And how does the cultivation of forest crops differ from that of wheat or corn or hay? To cultivate is to raise, to improve, or to foster the growth of by labor and care. Ordinarily the more care and labor we use in growing field crops, the better the returns. Not only is the harvest more abundant but the quality is improved and consequently the selling price is raised. We are careful however not to spend time or labor on work which we do not feel reasonably sure will yield profitable returns.

Field crops can be changed from year to year on the same area, but a forest of spruce once started must remain spruce, at least until it can be cut, and even then the next crop is usually of the same species. Nature furnishes and plants the seed for a forest crop, except on cleared or denuded areas, but the trees, if not protected and cultivated in their growth to maturity, end in becoming a wild forest, not an industrial crop.

Obviously the forest owner, since his crop is more or less fixed and requires such a long time to mature, should have a carefully thought out policy regarding his holdings. Policy is prudence or sagacity in the conduct of public or private affairs, wisdom or shrewdness in management. A timberland policy, perhaps more than that in most lines, requires wisdom and foresight since serious mistakes cannot be rectified for a long time and may prove very costly.

The idea of industrial forestry is not entirely new in connection with the handling of privately owned forest land in New York State. On May 18, 1908, Finch, Pruyn & Company of Glens Falls, New York, made application to Washington for an examination of forest lands, and I wish to quote some paragraphs from the letter signed by Mr. Ostrander, Woodlands Manager, that was attached to the required description of the property:

"The lands of Finch, Pruyn & Company, Incorporated, aggregating in the neighborhood of one hundred and sixty thousand acres, are located in the heart of the Adirondack region of New York State, and lie at the headwaters of the Upper Hudson, the Schroon, and the Cedar Rivers. The lands are not all contiguous or in a solid body but are in three distinct groups or areas which will lend themselves readily to a division of

<sup>1</sup>Presented at the annual meeting of the Society of American Foresters, New York, December 28, 1928.

the property for the purpose of making a forest working plan. . . .

"The forest upon the property of this company is the typical forest of the Adirondack Plateau of New York State, from which more or less timber has been taken. Prior to 1890 only saw logs were cut, which meant a limit of twelve to fourteen inches on the stump. Since 1890, and until 1907, the lumbering included logs used for pulpwood and the size limit was dropped to eight inches, and in many instances under that, so that the top log would measure four or five inches. The spruce, of course, is the predominating species and is to be found through the entire forest. There is some considerable hemlock on different portions of the property, and a scattering of basswood, cedar, and pine. Aside from this will be found the Adirondack hardwoods—birch, beech, and maple. . . . Probably lumbering operations have at some time been conducted over the entire property but there are portions classed as virgin forest and if lumbering operations have been conducted on these portions it has not been within the memory of men now living.

"It is the desire of this company to have prepared a working plan which will show the growth, production and habits of the important species in the forest, and to guide the management of the property in providing for future increment. This company is engaged in the manufacture of lumber and paper at Glens Falls, N. Y., and desires to know what quantity of merchantable timber, if used at its mills, can be taken from this forest with due regard for a successive crop or crops for an indefinite period of time. It also desires the benefit of such rules for conducting operations upon the property as are adapted to the practice of forestry."

This quotation has been given here because it gives a definite idea of how a real attempt at forestry was begun twenty years ago and what the viewpoint was at the management with regard to the woodlands and their business in general was at that time.

The examination asked for was made by representatives of the Forest Service and the employment of a forester was recommended. Shortly after this I received a letter from the company asking if I would consider taking up this work and if so, that I come to Glens Falls for a general discussion of the matter.

In July, 1910, work was begun on a general valuation survey of the entire property and the drawing up of contour maps and timber sheets on a scale of four inches to the mile. Topography was based on the U. S. G. S. quadrangles, the areas being photographed and enlarged after the property lines had been marked on them. This work and the preparation of data, together with the drawing up of a general operating plan, took over two years. It showed the land to be in good growing condition generally, with only a limited amount of burn and about 20,000 acres virgin.

By this time we all realized that making general plans for handling timber lands, and actually putting workable plans into effect, were not at all the same thing. Our growth figures were too incomplete to be relied upon but showed too small a total annual increase to supply the requirements. The contour maps were not accurate enough for laying out cutting operations and roads and we had little usable information regarding mortality in old or in second growth stands.

A beginning in more intensive control was made by marking all trees to



at, stopping as much as possible the use of valuable logs or young trees in building camps and roads, cutting low stumps, and taking everything worth while in the camps. Through coöperation with the Conservation Department at Albany and the use of local patrolmen, fires were pretty well looked after. No fires of any consequence have occurred on our lands since 1908. The management decided to buy more land as opportunity offered, and continued to buy some pulpwood and logs in the open market. This was to continue until such time as they could feel sure that their holdings were growing enough wood to supply the mills permanently. Stumpage was purchased in Canada and considerable land in the Adirondacks.

The need for more accurate information led to a rather extensive and intensive study of growth in 1923, with the aid of Prof. A. B. Recknagel, Forester for the Empire State Forest Products Association. Just prior to this we had started the work of a combined intensive valuation survey and the making up of relief models and timber maps, on a scale of eight inches to the mile. Edward S. Bryant of Boston aided in getting this work under way.

Our growth study showed that the land owned, somewhat over 200,000 acres exclusive of water and waste areas, was nearly enough to supply the needs, but it also brought home more forcibly the difficulty that had all along been turning my hair gray. We had a lot of land upon which there was a fair amount of spruce and fir but this was overtopped by poor hardwoods that had no commercial value, could not be given away, could not even be cut down without

heavy expense and also without a lot of damage to the softwoods. I made a study of conditions on areas where we had sold hardwoods for fuel and where cutting had been done near logging camps for firewood, and also along streams for improvements, and with the advice of Mr. Austin Cary of the Forest Service, we laid out plots in 1925 in various localities to get figures on cost and results from killing poor hardwoods by girdling. To date we have spent somewhat over \$10,000 on this work, together with some weeding out of small hardwoods that are hindering small spruce, and have covered somewhat over 5000 acres. Perhaps 40,000 acres should be treated in this way and will be in the next few years.

Part of the girdling is being done on lands logged during the past 15 years and part on lands having a merchantable stand at the present time which will be cut over in, say, 8 to 12 years, but where there is a considerable amount of hardwood which if left will occupy the ground after the logging of the softwoods, but if killed out now will give the larger spruce a chance to expand their crowns and the smaller ones to occupy the ground so that the hardwood cannot get in enough to crowd them out after the lumbering.

These girdled areas have been carefully inspected this fall, and besides our own study Prof. S. N. Spring is making measurements annually, starting this season, on carefully laid out plots to determine, over a period of years, just what the speeding up of growth actually amounts to and where it will be most profitable to girdle in the future. These measurements are made in connection with the annual field work given Cornell seniors on Finch, Pruyn & Co. lands. A very

gratifying increase in growth, both in height and diameter, occurred last summer on the areas girdled in 1925.

This work of girdling and thinning is of greater importance than might at first appear. Over a period of years we can get a materially greater amount of merchantable softwood or we can get a certain amount in a less number of years, that is, cut on a shorter rotation. Looking at it in another way, we can get a continuous supply for the mills from a less area and thus save capital investment in land and interest, as well as annual taxes and protection costs.

In 1923 it was definitely decided to handle all lands on a sustained yield basis, that is, not allowing the cut over a period of years to exceed the growth for the same period. As a matter of fact, the total cut since 1910 has been less than the total growth, due to cutting stumpage in Canada and buying more or less wood in the open market.

Generally speaking, coöperation has been the general timberland policy of Finch, Pruyn & Co. for the past 25 years—coöperation with the Forest Service at Washington and with the Experiment Stations in getting and giving general information; coöperation with the Conservation Department at Albany in fire protection and in obtaining seedlings for what planting we have found it advisable to do; coöperation with other forest owners in the exchange of ideas and plans; coöperation between the management and the engineering and forestry branches, and between all these and the woods force; and, lastly, coöperation with nature in carrying out the work, not by tempting to break her laws, but by study and observation to aid her in giving her best.

Coöperation on a nation-wide scale, I believe, the only hope for any wood while industrial forestry in the United States.



# FORESTRY—A BUSINESS

By CHARLES W. BOYCE

*Secretary-Forester, Woodlands Section, American Paper and Pulp Association*

**I**T IS difficult for the forester to visualize forestry as a business enterprise. It is when he tries to analyze the future that the forester is especially subject to sentiment and to preconceived ideas based upon sentiment, which prevent unprejudiced analysis. Too frequently forestry thought begins with unquestioned traditions; it follows time-worn grooves; it reaches bromidic conclusions. But the axioms of forestry are not infallible. A glance at some of them from a rather different viewpoint may be, at least, instructive.

After all, just like cement, iron, or dirt, wood is an impersonal material, and the economic conditions which surround it are much the same as those which affect other similar materials. The great total and per capita use of wood in the United States has been possible because wood has possessed and still does possess certain economic advantages over other materials. In pioneer days wood was supreme; its general distribution, easy accessibility, and great adaptation to many uses were unassailable advantages. But pioneer days are over. Now wood is being forced into a position where competition from any number of other materials and competition between different kinds and sizes of wood are creating a new economic set-up which affects the possibilities of forestry and even the conception of forestry.

One aspect of this change, that which affects the consumption of wood, is under way and enough is known concerning it so that something more than a guess as to its future course is possible. The other aspect, that which affects the production of wood, its growth, is not so clear; its future course can only be guessed.

## DECREASING CONSUMPTION OF WOOD

The consumption of a group of wood commodities representing 80 per cent of our total wood consumption is decreasing. Lumber use has decreased 200,000,000 board feet a year since 1907. Fuel wood, estimated at a third of our total wood consumption, is undoubtedly decreasing; there are no statistics to indicate how much or how fast. The same situation exists in fencing and shingles. A recent survey of future tie consumption indicates an ultimate reduction in annual use of 30,000,000 ties. In some measure these and other reductions are being offset by increased uses of wood by new industries and further developments of existing uses. Such expansions are slow, however, in comparison with the decreases.

The uses to which wood might be put still exist; in fact they are increasing in their yearly material demands. If wood dominated the material field as it did fifty years ago, our consumption would undoubtedly be much more than it is today. But the rapid diminution of available supplies in relation to demand has boosted prices, with the result that while

possible demand has undoubtedly grown substitution has increased by tremendous strides.

#### SUBSTITUTION

Particularly since the war, substitution has attained a new significance. In every industry it is present in constantly increasing ratio. Those industries which control large supplies of raw materials are being forced by the pressure of modern business into a constantly widening diversification of products. As a result, a raw material today competes with others which ten years ago were not in the field, and the margins of material use have spread out until there is no sharp distinction between them in many commodities. That material which just barely serves the purpose, and which is the cheapest to obtain and manufacture, generally holds the advantage. But the advantage is often narrow; a 10 per cent price increase, for instance, may force a material entirely out of a market.

Substitution has taken its toll among the forest industries. Rising values have favored it. There is no doubt that it will continue for the forest supplies are continually decreasing, which constitutes a strong tendency toward price increase. It is probable, therefore, that many wood uses will be replaced by other materials or by the use of lower grade wood in the same or converted forms.

#### SUPPLIES

Use, waste, and fire have accounted for the depletion of over three-fifths of our original timber stand. Region after region has been opened up and cut over. At the present time cutting in our last great reserve of virgin timber is well under way, and increasing yearly. At

present rates of depletion, *all* will have been at least culled over within the next half century.

But forests are dynamic; they grow. In 1920, the Forest Service estimated the annual growth in the country as a whole at 6 billion cubic feet, or about a quarter of our annual use at that time. Since then much has been done to stimulate forest growth by curbing forest fires. There is no doubt that our present annual growth, if it could be accurately measured, would show a significant response to this stimulus. It is estimated that already 30 per cent of our lumber cut is of second growth timber. Pulpwood, ties, cooperage, turning stock, and many other products draw heavily from second growth stands. It is interesting to note that the high level of lumber production in the North Carolina pine region has increased from about 20 per cent of dependence upon second growth in 1900 to about 90 per cent at the present time.

Furthermore, we are tending toward greater utilization of the timber cut. Increased values have encouraged more complete use of forest material. Although there is yet much to be desired, closer utilization is gradually increasing through the integration of wood-using industries, more scientific management and the development of facilities for marketing odd size and low grade material.

#### BALANCED SUPPLY AND DEMAND

Consumption and supply tend toward an eventual convergence, since the latter is decreasing at the more rapid rate. Just when or to what degree this will take place is altogether uncertain. The many factors which will influence such



convergence are in large measure dependent upon what prices will be at the time. It is conceivable, however, that annual consumption and growth will meet not far from one-half the former and twice the latter—between 12 and 15 billion cubic feet a year.

The United States has a total forest production capacity of from 30 to 35 billion cubic feet a year. This is somewhat greater than the present annual use. As the actual demand for wood, influenced by higher prices, decreases, there is bound to be a greater spread between it and possible growth. At the point where consumption and actual growth converge, possible growth may be from two to three times the demand.

Then demand can be met either by partial growth on all lands or by full growth in part. If the solution of our forest problem depended upon a choice between these two alternatives it would be relatively simple. But such is not the case. Partial growth on all lands is but a stage in the transition from the virgin forest. It will be supplemented and eventually succeeded by full growth on an increasing proportion of the total forest area. This is the final stage in the transition to forestry.

Eventually, it is probable that the United States will use a large part of all the wood it can grow, but that time lies far in the future. Competition from other materials is tending to make consumption of wood increasingly inelastic, and any upward movement without price decrease can be accomplished only by the expansion of new uses. It is unreasonable to expect old uses, which are now decreasing because of competition, to expand greatly in the future when prices are even higher.

Growth of wood consumption through new uses will naturally be slow. Expansion in the use of pulpwood is an example. The first significant use of pulpwood occurred in the early seventies. Since then tremendous increases in its use have occurred, yet in recent years pulpwood accounts for but 2 per cent of our annual forest drain; it is insignificant beside lumber, fuel wood, and fencing.

#### RELATION OF SUPPLY AND DEMAND TO STUMPAGE PRICES

The movement of supply and demand is significant in forestry through its influence upon prices, for upon them the economic feasibility of both intensive and extensive forestry is peculiarly dependent. Stumpage prices, or the prices of standing timber, are particularly significant, for they reflect not only the current competition in forest products, but also the much more slowly moving but just as intense competition for forest control.

The popular idea of stumpage price trends is based upon exceptions. The skyrocketing of white pine, long leaf pine, and certain hardwoods means little as far as forestry is concerned. Average prices must govern forestry policies, for in them are reflected the economic factors which affect the transition from virgin to man-grown forests. Increased supplies through the lowering of quality requirements and shifting demand are particularly pictured in average prices. Their trends follow the trend of supply and demand toward the point of convergence. They, not the prices of high grade virgin timber, will govern the economic feasibility of forestry.

Softwood stumpage prices today average \$7.98 per thousand in New England,

\$8.14 in the Middle Atlantic States, \$6.43 in the Lake States, \$5.49 in the South Atlantic States, \$5.71 in the lower Mississippi Valley, and \$2.92 in the Pacific Northwest. The apparent spread in these regional averages amounts to more than \$5 per thousand, but the actual spread in values is much more. The majority of the timber in the Northeast and South Atlantic States is second growth, and in the Lake States and lower Mississippi Valley it is largely a mixture of inferior virgin species and second growth. Practically all western timber is virgin growth.

The prices of second growth softwoods vary from \$8.77 and \$8.14 in New England and the Middle Atlantic States, respectively, to \$3.07 in the Lake States, \$5.26 in the South Atlantic States, \$3.58 in the lower Mississippi Valley, and \$1.82 in the Pacific Northwest. The spread here is \$6.95, or nearly \$2 more per thousand than in the case of softwood timber as a whole. Here too the difference in actual value is probably greater.

Wide ranges in values tend to disappear as a region develops. Values in the West, the newest region, range from a few cents to \$7 and \$8 per thousand and in the South from \$2 to \$15. In New England they range from \$4 to \$12. But the values of stands of different species but equal qualities in New England vary not more than \$2 or \$3. The range in regional averages tends to decrease in like manner.

These price levels have been established by a long, continued increase from zero in each forest region. The determination of the level in each region is largely a matter of time, development of industry, and transportation.

## FUTURE VALUES

What future values will be is indeed problematic. Yet a clue to trends may be had by superimposing the various forest regions one above the other in the order of their age of development. There are, of course, variations in conditions which prevent tracing a more or less exact trend, but these variations are not wide to make broad comparison impossible.

Moreover, there are bound to be further price increases in the future. To a large extent subsequent price increases will be governed by the price at which forest products from new marginal timber supplies can enter our markets as present supplies decrease. There are two types of marginal timber. One is based upon accessibility and the other upon quality. As prices have increased in the past, the quality and species requirements have been lowered. This will continue in the future and will tend to retard price increases until the lowest quality falls within the margins of use.

If prices increase enough timber owners in other countries may find it profitable to compete in United States markets. Already wood pulp from Scandinavia is being sold in the United States in large quantities in competition with the American product, and Finnish lumber has netted a small profit at present prices in eastern markets. This would indicate that any increase in prices would lead to large imports. But imports, other than pulp, will not be significant until the great softwood stands of Russia can compete in American markets. At what price this can happen depends upon the way Russia goes about it. It is conceivable that Russian lumber could be



ne a factor in American markets if  
ces increased but 20 per cent—in fact,  
thin the month a cargo of Russian  
nber was received at Poughkeepsie.  
urther price increases, however, will  
retarded by increased supply through  
water imports.

These economic adjustments will na-  
ally be reflected in upward stumpage  
ce trends. But as the upward trends  
the prices of products will be limited,  
also will the trend of stumpage values.

### REGIONAL PRICE TRENDS

The rate of stumpage price increase  
l vary in the different forest regions.  
20 per cent increase in the price of  
est products, for instance, would prob-  
y affect stumpage values in the North-  
t in direct proportion. But values in  
South Atlantic region would un-  
doubtedly be increased somewhat more  
those in the still lower-priced regions  
ch more. The reason for this lies in  
fact that regional values of most  
oducts tend to draw closer to the  
ited States average as time goes on.  
is is clearly shown in regional prices  
wheat and coal. Market and transpor-  
on adjustments take place which favor  
a greater degree the low-priced region.  
There are, however, other factors  
ich will tend to increase timber values  
re rapidly than product values.  
ong them, the tendency toward closer  
, increasing the quantity of salable  
oducts which can be derived from a  
en quantity of timber, is the most im-  
tant. Under present conditions of  
nufacture, but one-half of the wood  
ght in the forest is manufactured into  
roduct for sale. Increases in the pro-  
tionate use add greater value to the

standing timber. It is conceivable that  
the volume of wood actually used may  
be increased to 75 per cent of the original  
volume of the forest. If this were re-  
flected directly in stumpage values, it  
would indicate the possibility of a 25 per  
cent. raise.

Of course this is largely speculation,  
but there is some reason for it. Many  
will point out that past increases augur  
future trends of a like nature. But have  
average stumpage price increases been  
so great? If past increases in stumpage  
values are corrected for variations in  
money value, they lose much of their  
significance. The average of 1924-1926  
softwood prices exceeds the 1912-1915  
average in New England by 59 per cent,  
in the Middle Atlantic States by 44 per  
cent, in the Lake States by 32 per cent,  
in the South Atlantic States by 55 per  
cent, in the Lower Mississippi Valley  
by 35 per cent, and in the West by 32  
per cent. If from each of these per-  
centages the increase in value of "all  
commodities" during the same period,  
which amounts to 54 per cent, is sub-  
tracted, it is plain that the upward trend  
is not so great as generally supposed.

### PRICES AND FORESTRY

Prospective values have a vital bearing  
upon the conception of forestry and  
through that conception upon the prac-  
tice of forestry. After all is said and  
done, there is only one measure that is  
absolutely necessary for timber growth  
and that is fire protection. Given fire  
protection, some kind of a forest will  
follow cutting. It may not be of the  
right species, or it may not start for  
many years, but eventually a forest will  
grow. The original forest stand in the

United States is ample proof of this fact. Forestry is, then, simply the application of measures that will help nature do its work, that will assure prompt restocking, shorten the time of growth, and increase yields and qualities.

A given timber tract, for instance, can be made to produce 5000 cubic feet of wood per acre in a 50-year rotation under intensive treatment. With no treatment except fire protection the same area will produce but 2000 cubic feet of wood in 70 years. The forester's job is to raise the yield toward 5000 cubic feet, to shorten the period of growth toward the 50-year minimum, and of course to improve the quality of the timber as much as possible. Any measure that promises results in any one of these three ways is a forestry measure.

#### COSTS OF FORESTRY

The costs of forestry may vary from a minimum which includes only the cost of land ownership and fire protection to a maximum which will insure a full crop of the best quality of timber in the shortest possible time. The cost of land ownership is unescapable. The cost of fire protection, while not now a universal cost, is tending toward a permanent charge, which the land owner must meet directly or through increased taxation to provide funds for governmental protection agencies. Beyond these costs, there is a whole series of costs covering various cultural measures which the land owner may incur in any degree he sees fit or not at all.

The costs of cultural measures vary from zero to the point of diminishing returns. They are incurred by a land owner to assure a profit or to increase

the relative profit from timber production upon any given piece of land. Returns and profits tend to increase in forestry as in any economic endeavor, by the application of capital, labor, and management, up to the point where additional applications fail to yield commensurate returns.

The returns which may be obtained from the sale of timber are vital to forestry. When they exceed the unescapable costs of land ownership, and fire protection, expenditures for forestry become feasible. At first the measures must be of course, simple and inexpensive. As intensive measures become possible as the relative price of timber increases or the cost of application of forestry measures may be reduced.

There are three important ways in which the costs of forestry may be influenced. The costs of land ownership may be reduced through reforms in taxation; the unit cost of wood production may be reduced by developing methods to use and sell profitably a larger percentage of the wood grown; and the annual forestry yield may be increased per unit of land and of total investment by the effective application of forestry. The first two items affect the virgin and accident second growth timber stands as well as the managed stand. The last affects only the managed stand; its comparative possibilities limit, for the time being, the possibilities of forestry.

These and other facts emphasize the importance of expending funds for forestry only under the conditions which promise the greatest return for the money invested. This cannot be stressed emphatically. Just as in agriculture there are gradations in profit-producing capacities of various types and loca-



land from minus zero upward. Lands which under normal treatment will not yield a profit are distinctly sub-marginal and should be used only in an extensive way if at all. Effort is, there, concentrated more and more on the lands which produce the greatest returns.

The same is true in forestry. A glance at the results of any yield study reveals wide variations in growth rates and in ultimate wood production. The financial interpretation of such statistics shows an even greater range, because of the varying time elements. Eventually much of the financial spread will be eliminated by rent. But until comparative financial returns from timber growing in different regions and upon different classes of land are established, rent and land values are purely nominal. Good forest land today brings not much if any more than poor forest land. Forest land values are high if at all, more by the accessibility than by producing power of the land; harvesting, not growing, cost is now the criterion.

The first forestry efforts should be made only upon the best forest land. The inherent difference in growth rate and fertility of the different species sets another criterion, and the variation in capitalization costs caused by accessibility is still another. The fact that for generations forestry must compete with depleted virgin and accidental second growth timber in which nothing more than the cost of land ownership is invested, emphatically stresses the necessity of great care in selecting forest land for forestry purposes.

#### FORESTRY SUBJECT TO BUSINESS LAWS

Forestry is a business, and it is subject to business laws. Foresters are too prone to think of forestry as a measure neces-

sary to supply a material essential to human existence, and as a means of using land which would otherwise lie idle. "America must have timber," and "Land must not lie idle," are frequent dogmatic statements which are but half truths. An abundance of wood at reasonable prices and the use of all land at reasonable profits are both highly desirable—in fact the realization of each is important in our national economy. But how can they be realized until a long series of adjustments take place, until the whole conception of timber use and timber production has become stabilized upon a business basis of costs, returns, and profits?

As Austin Cary has frequently said, forestry is not an obligation; it is a business opportunity. If so, and there is no reason to doubt it, it is reasonable to expect the development of forestry to follow the well-grooved path of all business development—a path made by the laws of supply and demand. The urge to grow timber is the urge to make a profit. The will to supply a much-needed material and the will to use land are subjected to the urge to make profit. The only obligatory sacrifice that the public can expect from the owners of forest land is honest coöperation in determining what to do and a willingness to experiment.

The forester, on the other hand, must realize that forestry is a business and that costs and returns are a vital matter. Not only should he concentrate upon finding out what measures are necessary to grow timber, but he should also determine how, when, and where to use these measures. There is a vast difference between these aspects. Who other than the forester should reconcile them?

# THE SPHERES OF FEDERAL, STATE, AND PRIVATE FORESTERS IN INDUSTRIAL FORESTRY<sup>1</sup>

By WILLIAM L. HALL

*Consulting Forester, Hot Springs, Arkansas*

**W**ITHIN the United States foresters having to do with industrial forestry are of three principal groups, those in Federal employ, those in state employ, those in private employ. Each group has contributed to the progress already made. Each group has an important place in future development. If we analyze the situation we shall see that it is not one where each group can promiscuously extend a helping hand, taking hold anywhere and letting go at will. Rather we find a somewhat clear division of the field. It is not very difficult to mark off for each group that portion of the field where it can work with greatest helpfulness and result. This may be an appropriate time and place to present some comments upon the logical spheres of activity of the three groups. The subject attracts us by its importance. It is of deep interest to determine if we can how each group may best play its part.

## FORESTERS IN FEDERAL EMPLOY

Let us consider first foresters in federal employ, the members of that vast and powerful organization, the Forest Service. Is there a field of activity within the great domain of industrial forestry that is especially appropriate for the

activities of federal foresters? There is unquestionably, and it is of basic importance. The great field of research with all its ramifications is one where the initiative should rest with the federal government. This comprehends activities such as the forest experiment station, forest products laboratory, forest insect investigations, forest inventory, forest statistics, and national or regional inquiries of any kind bearing upon our forests or forest industries. Coupled inherently with this is the presentation of facts, available to all alike. One of the greatest needs in industrial forestry at present is basic trustworthy information on such fundamental things as growth response of timber stands under various methods of treatment, cost of conversion of trees of different sizes and values realizable therefrom, extent of our forest area and classes of timber and density of stocking. Many other great problems await attention. There is need of many years of patient, well planned fundamental research.

Upon the federal government rests another heavy responsibility, that of cooperation with the states both in forest protection and in popular education of the elements of forestry. In this field it is believed that the initiative should rest with the states, but the responsibility rests with the federal government to contribute to the planning and financing of this work is unmistakable. There should be a

<sup>1</sup> Presented at the annual meeting of the Society of American Foresters, New York, December 29, 1928.

meeting of that responsibility both in men and money. Unless these things are done and done by the federal government industrial forestry will go limping along in the highway of progress.

#### FORESTERS IN STATE EMPLOY

Foresters representing the states have also a heavy responsibility to meet in providing a basis for industrial forestry. Upon them first of all rests the duty of organizing and carrying out a state-wide system of forest protection. Theirs is the initiative here. Probably no state forester will claim that his state has fully met this responsibility. Many will freely admit that the bigger part of the undertaking still lies ahead. The three forces under the state forester's command are his own state organization, the coöperating federal resources, and the coöperating timberland owners. The proposal has been made that it is equitable for the private owner to pay half the total cost of fire protection and for the state and federal government to contribute equally to the other half. The writer is disposed to support that as a fair arrangement. The state forester has the job of seeing that each party carries his share of the load and that the system actually gets results.

Upon foresters in state service there rests another responsibility that appears not to have been fully met to this time. This is the duty of carrying to timberland owners elementary education in the principles and possibilities of forestry. It is desirable to fix in the minds of timberland owners the idea of growing successive crops of timber and to stir each owner to a consideration of his own possibilities in that direction. This is truly educational work and the need of it is

great among both small owners and large. This field, especially in so far as it relates to the small owner, lies open to activities of the extension forester and he has a large and difficult task. Although progress in this field is not as rapid as we should like, the plans now being followed are probably as effective as any that could be devised. Fortunately the extension forester has coöperation from the federal government, from various local associations, and from other interested agencies.

We should not leave this phase of the subject without pointing out that foresters in state employ should stand ready to coöperate with the federal government in all phases of research affecting the state.

In these fields of activity proposed as particularly appropriate for foresters in federal and state employ the service is to all alike, it is a truly public service; there are no clients for whom special service is rendered, either paid for by the public or the client. We here develop a fundamental guiding principle. Public service is or should be available to all on exactly the same basis. There can with propriety be no preferred individuals or groups.

#### FIELD OF THE PRIVATE FORESTER

What place does the private forester have in industrial forestry? The private forester may, in my way of thinking, appropriately ask the undisturbed right to organize and carry out specific reforestation projects. Should not foresters representing the federal government and the states also assume the right to lead individual forest owners and companies into the practice of forestry, helping them as far as their public duties will permit? My answer is NO, they should



not assume that right. Have they not done so at times? **THEY HAVE**, and in most instances they have failed to observe the limits to which they may properly go. This leads to confusion in our profession. Especially it baffles, discourages, and sometimes stops the private forester in the field which I maintain is distinctly his own, and should be so recognized.

There are several reasons which I wish to give in support of the point of view that foresters in federal and state employ should not connect themselves with and attempt to direct private reforestation undertakings:

1. The forester in public employ cannot properly have clients. He cannot offer to one individual or group what he cannot make available to all. He has not the assistance and resources at command to make the service available to all.

2. Even to a few clients the public forester cannot give adequate service. It is a puny conception of forestry to assume that any forester, however well informed and experienced he may be, can by contact with a project for a few days once or twice a year establish that project on a sound basis and maintain it in healthy condition. The writer has personal knowledge of cases where the financial interests are very large, where there is a moderate desire on the part of the owner to grow successive crops of timber, and where there is the utmost need of regular and competent service of a forester, but where the owners feel that they can get along very well by a little occasional service from the state forester. The state forester is contributing to that misconception and lack of advancement by allowing himself to be used in that way. That is a wrong to the profession of

forestry. It is hindering the advance reforestation where all other conditions are favorable for it.

3. A third reason against public foresters taking up this class of work is that if they go into it they fail fully to recognize their responsibilities in fields which are particularly their own.

4. Industrial reforestation projects are invariably in the hands of strong financial interests. But those interests are as keen as anybody to get cheap service and save money. Their only reason for seeking the service of public foresters is that they may get that service partly paid for by the public. I ask the foresters of this Society if service so rendered is a fair and defensible use of public funds.

The McSweeney Act providing for forest research in its first draft contained a section that would have furnished a partial and complete service in forestry to private land owners in the United States. That section after careful consideration by the National Forestry Program Committee was dropped. However, a bill is now pending in Congress which provides for the same thing. If it should pass into effect would be to close the door to private foresters and place industrial forestry on a subsidized basis. While deeply respecting the views of the foresters who support this bill, I am profoundly convinced that it is unwise legislation.

Against that proposal let us set up the opposite. Give industrial forestry a chance to stand on its own feet. Give suitable growing conditions and let it alone.

This is the natural and logical field of the private forester. He is subject to none of the difficulties enumerated as confronting the public forester in the field. Conditions will determine whether

the private forester can best serve one employer or several. He may supervise the work of a number of other foresters serving as assistants.

Another condition may well be pointed out, for it is a matter of much importance. The forester must enter into very confidential relations with his employer or client. He must know his employer's plans and cooperate in carrying them out. Nearly all reforestation projects involve land purchases, buying at good prices, occasionally financing, and assistance in desirable trades. In all such activities the forester can and should play an important part. He virtually becomes the director of the land policy of the company. His superior knowledge of land and timber values, forest conditions, and growth possibilities makes his services of highest value to his employer. Is it not clear that the publicly employed forester cannot enter into these more confidential and valuable phases of the forester's service? It is these considerations that mark the direction of operations in industrial forestry as distinctly the field for private foresters.

If there can be general recognition among foresters of the distinct divisions of the field as it relates to industrial forestry it will be helpful to all. Our work will then be harmonized. We can cooperate with and support one another. If we do not agree on our field of work we shall have misunderstanding, bickering, and strife to such an extent that the movement of industrial forestry will fail to progress as it should. And our profes-

sion will fail to give the country the helpful service it has the right to expect.

There is one great responsibility that rests on every forester regardless of the group to which he belongs. That responsibility is to make clear to land owners that the initiation of wise reforestation projects and the practical application of forestry requires foresters. Many landowners are confused and uncertain on the point. Foresters have sometimes contributed to that vagueness and uncertainty by prescribing fire protection as about the only thing needful to make timberlands productive and profitable. That is a serious mistake and we are suffering from it today. Those of us who are actually engaged in growing crops know that it is essential to get the land well stocked with desirable species, to provide optimum conditions of growth, and then to secure full and profitable utilization. To do this requires the successful handling of many adverse conditions through a long period of time. Instead of being easy, it is one of the most difficult of industrial undertakings.

This we must try to make clear to the timberland owner. Only when he has this conception of his undertaking can he realize the importance of the forester's service and the necessity of the forester's constant contact with the project. He must come to understand that no one but a forester can see the project through. To help him attain that point of view is a responsibility of the whole profession of forestry.

## SOME ECONOMIC ASPECTS OF FORESTRY FROM A BANKER'S VIEWPOINT<sup>1</sup>

By SINCLAIR A. WILSON

*President, First National Bank, and Chairman, Forestry Committee, Portland,  
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**B**ANKING institutions, custodians of wealth, are vitally interested in proper land use, permanent industries and pay rolls, maintained transportation facilities, and the economic independence of individuals and of the public. By nature, they profit from experiences of the past, study of the present, and preparation for the future. Their part should not be passive—it should be active.

In Oregon, as in almost every state of the union, forestry, from the seedling to the boards of which our homes are built, plays an important part. I confine my remarks to Oregon.

It is axiomatic that land should be put to its best use and kept busy. Forests should not be grown where better land use can be found, and intensified farming should not be attempted where tree farming pays best. Five-twelfths of Oregon is fit only for growing trees, being too poor in quality, too remote, or too rough for other profitable employment. Therefore the forest land-use problem in Oregon takes on stupendous proportions.

Our lumber industry means much to us. Its loss would prove incalculable. Virtually the whole earth pays tribute to Oregon through this channel. The

value of our lumber products in 1917, f. o. b. mill, equalled \$121,000,000. Keep this up in perpetuity, and it tells on huge dimensions. Can we, with our potential raw supply always possible, afford to watch idly this industry go into liquidation as it always has in other states when their "inexhaustible forests" have become exhausted? It is a challenge.

Of this revenue, a large proportion goes to 45,000 and more employees. Over 200,000 persons in our state receive their daily bread directly from the products of the forest, to say nothing of tens of thousands of others indirectly dependent. Lumber payrolls should be jealously preserved.

Is it necessary here, before forested land, to dwell upon the importance of transportation? Is it required of me to show the immense wood tonnage passing over mountains and water, making possible the maintenance of trackage and ships and the employment of an army of men? Should we dwell on its beneficial influence on raising prices for farm produce and other commodities? Shippers cannot long operate without profit; cut off one sizeable commodity and rates are affected; advance rates and every farmer, merchant, and manufacturer is hurt. Low cost transportation is essential to successful competition in our broad markets—we cannot live safely within ourselves—forestry plays a strong part.

<sup>1</sup>Paper delivered before the North Pacific Section, Society of American Foresters, November 27, 1928.



Cities, counties, and municipalities cannot exist without revenue. The tax contribution from the forest, the mills, the laborers, the stores selling to them and the farmers dependent upon them, in the aggregate is the life blood of municipalities located in essential timber land counties. With no timber, no mills, their credit is gone, their independence destroyed. More than this, they become dependent upon the state at large, for if they cannot pay the state's bill, others who can, must. It has happened so often before and at such a cost! Only folly could blind our eyes to the situation.

Therefore bankers are of necessity vitally interested.

It is a problem, and its answer lies in part in cutting only that amount each year which can be grown within any operating zone. Over-ripe timber is the exception.

This means a program of perpetual operation, which in turn requires large acreage and capital. A 500,000 board-foot capacity mill (not an exception today) operating on a 250-day basis for 60 years would require 187,500 acres of land and not allowing for hazards of fire, insects, disease, or failure. Carry bare land and cost, taxes, fire protection, miscellaneous items, and administration through to the first crop and large capital requirements are obvious.

Outlay in forests, logging equipment, mill construction, and permanent working capital is ever increasing. The capacity to finance a single medium-sized plant capable of economic operation has in general passed out of the individual's reach. The problem will increase as the supply of logs on the open market decreases. This means broad ownership and long-time bonds, neither of which,

in the main, is feasible without long-time operation. Financing a logging outfit for the purpose of cutting off the stand, when on essential forest land, without thought of recropping, is in reality nothing more than liquidation. Liquidation, which has already started in some counties, is a sorry solution. To allow timber capital to migrate is poor business. To punish forest land with excessive taxes is abortive. We are in duty bound to constructive policies. Public interest demands it.

The first step then would seem to be to encourage the regrowth of timber on cut-over forest lands. This would bring about continuous maximum production except in locations where cut exceeds growing capacity; and where we have cut excessively it would tend to span the gap between exhaustion of the virgin stand and the first rotation crop.

Now, none of these lands will be retained if it is unprofitable to operate. Nor is any lumberman going to undertake reforestation without some assurance of a reasonably constant cost. This item depends largely on the timber farmer's ability, except for taxes, over which he has no control, for the public sets this figure. Therefore it would be just to ask the public for some guaranty of a fair and constant tax charge.

In this particular presentation, I need not dwell upon the broad variation found between counties in stump land assessed valuations, taxes, and the like, nor need I dwell upon the land abandonment due thereto. Let me assert—if taxes were based upon the true value of the land with due regard to productive capacity, to competitive factors peculiar in timber growing, to a sixty-year period before crop maturity as distinguished from an-

nual crops, to the hazards from fire, insects, disease, and crop failure, and to the tremendous outlays of capital required in bringing such an enterprise to maturity, that then the present operator would have an incentive to log more carefully, to retain the lands, to pay taxes, to grow forests, to perpetuate manufacture.

The time is at hand when reforestation legislation should be effected. Much has been done in research; practice demonstrates that we can reforest. The longer we wait, the more timber is cut, the more remote is our opportunity to keep the industry always here and to put many mills owning timber upon a perpetual basis. We spend a precious sum in attempting to bring new industries to Oregon. Public interest dictates that we take the first step necessary to keep our greatest industry and payroll always with us.

As the first essential step, then, in perpetuating the industry and providing maintained tax revenue, the following lands should be included in legislative action: all essential forest land cut over, burned, barren, or producing forest crops, but excepting mature, merchantable stands. Essential forest lands are determinable. When suited to better uses or when the principal revenue comes from other sources than timber, then they can no longer be classed as "essential forest lands" and the law should provide accordingly. To promote continuity of operation, immature growths are important and should not be overlooked. If you sharpen your pencil, you will find that second growth almost mature, will, in most cases, pay a larger tax under such a bill as we will suggest than under the present land tax. Where selective logging is practiced on a broad scale in

the over-ripe stands, the operator will lose; where practiced in mature but not over-ripe stands, the state might lose the first year, but it more than gains in succeeding years because the revenue is continuous over the entire area so long as the forest is growing. Furthermore, such a tax would insure orderly marketing of such products; it would largely do away with cutting up mature stuff contained within the stands. Mature, merchantable stands, however, are not included because they at present furnish many counties with an indispensable tax revenue.

In providing a system for taxation we may consider a pure land tax, a pure yield tax, or a combined land and yield tax. It is economically sound to hold that taxes should be payable when the property taxed is best able to pay. The annual tax arises because revenues are most easily earned within a year. But here we have a crop from which there is no revenue for many years. A pure land tax would not meet the situation: it is inelastic, takes no cognizance of fluctuating market values over a long period, and puts a heavy burden upon the tree farmer when he is least able to pay and when his resources are needed for the many other expenses incidental to this business. Moreover, does the pure soil tax insure the state's purpose for if too high it defeats the principal purpose of the measure and if too low it cannot readily shape itself to increasing returns. It would be hard to administer because of the difficulty in classification as to productivity and accessibility. It is too arbitrary and uncertain.

A pure yield tax should be ideal if it takes into consideration the principle of paying when the harvest is reaped. It gives to the state a percentage of the gross crop, thus paying a land tax without

ward to net income; and it automatically adjusts itself to the fluctuating value of the dollar. If reasonable as to amount it would promote forestry, but the state would receive no annual tax for carrying on its business. Therefore, a pure yield tax will not answer Oregon's needs during the immediate future.

Providing for a definite nominal annual tax per acre and a definite yield tax at maturity would furnish the public with current revenue, would assure the tree farmer a dependable sum to base his operation upon, and would guarantee the public a percentage of the gross crop when harvested, thus making allowance for variation in dollar and log values. It has precedent in this country and has the endorsement of many leaders in taxation.

All essential forest lands, except mature, merchantable stands, being of a definite class should be automatically included, whether the operator wants it or not. Such a move is in keeping with the spirit of our constitution. The principle of equal taxation of competing capital enters in. Variations in production and valuation within the class are equalized as a measure by the percentage tax levied at cropping. Again, such automatic classification would throw all this land under the fire protection laws of the state, compelling operators to protect the young stands and the forest soil from destruction. With fire out, half the battle is won. This protection costs the operator money. Having the expense to bear, his private interests would be served by better logging methods, his investment would make him forest minded. This feature is, to my mind, outstandingly beneficial to both the public and to the tree farmer. It insures extensive

reforestation in any event. Furthermore, should subsequent regulative laws as to insect and disease infestations be enacted, all this land could be included at one stroke. It is wise and fair then that all reforest lands should be placed in the same tax status.

We believe the annual land tax should be 5 cents per acre. In many counties, where assessors have arrived at a classification of essential reforest lands, we find a tendency to approximate this figure. Reforest lands today furnish 0.6 per cent of our total taxes. Generally speaking, then, this would provide continuous revenue without material disturbance to present revenue actually received. It must be remembered that we are dealing with the least productive of our agricultural areas and with a crop that matures in sixty years instead of one. Five cents per year for 60 years compounded at an interest rate of 6 per cent per annum means \$26.65 per acre. This is high. But we should not contemplate the single acre—we should consider the entire tract to be operated. If the operating forest is 100,000 acres, it means \$1,500,000; if 200,000 acres it means \$3,000,000 in 5 cent taxes alone before the timber is ready for harvest. It would be fair and equitable then to make the annual land tax 5 cents per acre.<sup>2</sup>

<sup>2</sup> This might be misleading. To illustrate merely how costs mount, I took a bulk acreage, started all at one time on a reforestation basis from bare land. Few operations will be so conducted in Oregon. While the zone could easily be 200,000 acres, the first year there might be only 2000 acres, the next 2000 acres, and so on. The cost bill then to the operation would be less than if starting the whole program from zero at one time.—S. A. W.



The amount of the yield tax should be 10 per cent of the gross crop. This means that there will be no deductions for expenses, no consideration of net return. It is a percentage levy upon the gross crop to be paid at the time of harvesting. It is not a dollar tax, so we are not dealing in terms of value today, but in terms of the value of money when the crop is harvested. This is of special interest to the public. If we should add the annual land tax to this proposed yield tax, the total assessment against the property would approximate on the average 25 per cent of the gross return, which is a considerable item. The fairness of this percentage tax manifests itself when considering the values of stumpage in different localities. By itself it fully compensates for variations in values due to heavy or low quantity production, to quality, or to type of crop and marketability as far as topography and primary markets are concerned. A yield tax then of 10 per cent would appear to be fair.

Much has been said about the optional contract feature. After due deliberation, we feel that it is supportable, providing that tree farmers choosing to come under the contract are required to do more than they would be compelled to do under automatic listing so as to insure better than average administration. The public would benefit by a greater yield at cropping. This feature has been criticized principally because it attempts to bind the state to making no change in the tax as it affects properties under the contract for the period of the contract. It might be injurious to the tree farmer and it might be injurious to the state. However, the primary purpose of the bill is to start a definite program of reforesta-

tion of our rapidly increasing cut-over lands, and the majority of operators maintain that they will not start reforestation without a definite knowledge of what their tax bill will be. There is some justice in their stand because of experiences of the past in variable taxes. The least variation in the 60-year period would become a large item. On the other hand, with the Fairchild Tax Investigation in the offing, and for the purpose of further analyzing the contract situation, we conclude this feature should not be effective until March 1, 1933.

Finally, we come to the question of the administration of the law. We have in the Oregon State Board of Forestry machinery for determining what is, and what is not, essential forest land. Therefore we believe that this is the proper board for listing such land. However, in the State Tax Commission we have a public agency created for the purpose of determining what is fair and equitable, by whom these lists should be approved. But there are other interests to consider. For instance, the assessor may object to the listing, and it is his duty to do so if an error has been made. The property owner may likewise object. He too is entitled to his day in court. Therefore, before approval of the list, the Tax Commission should set a date for hearing. This is in keeping with sound practice. The State Board of Forestry should be the agency through which contracts with the state may be made because this board is responsible for the setting up of rules and regulations and the enforcement of the law.

In conclusion, these very definite recommendations may be considered in the enactment of any reforestation bill in the state of Oregon:

1. *Objectives of Forest Tax Legislation.* (1) To encourage private owners to hold title to, and to protect from fire, logged lands for timber-growing purposes. (2) To continue to raise from such lands a reasonable current tax revenue.

2. *Desirability of Immediate Action.* In the face of a growing acreage of abandoned and tax delinquent forest lands (now over one million acres) the problem is becoming acute and early action will save a correspondingly larger acreage to the tax rolls and to continued forest productivity. The federal Forest Tax Inquiry into the principles of forest taxation will not release its conclusions for two or three years and legislation such as now proposed will not prevent benefiting by that study later, when its results are available.

3. *Class of Land Affected by Such Legislation.* It is proposed that this legislation apply only to cut-over or burned land suitable primarily for forest production, and that the law allow the inclusion as "reforestation land" of all forest acreage which is now growing or may grow forest crops, and exclude all lands which are now supporting mature forest growth in merchantable quantities.

The law should also provide that if lands listed as reforestation lands have now or develop later values other than for forest growing, such other values may be the basis for assessment and taxation in addition to the annual reforestation land tax and the yield tax.

4. *System of Taxation.* Of the three principal systems for taxing forest lands that have been proposed, namely—a pure land tax, a pure yield tax, and a combination of the annual land tax and the yield tax, the last is favored as best suited to

Oregon's present conditions and as most likely to correct the present unsatisfactory situation.

5. *Automatic Listing of Proper Lands for Tax Purposes.* We feel that all lands which comply with the specifications in No. 3 above should be listed automatically for tax purposes under the provisions of this reforestation land tax law, without the necessity for application by the owner. This will place all land of the same character in the same tax status.

6. *Responsibility of Owners for Care of Land.* The present compulsory patrol law requires that each land owner must furnish protection from fire to forest lands and the fighting of fires thereon regardless of where the fire originated. It is the province of the State Board of Forestry to see that this protection is effective. The committee feels that if thorough protection from fire is given these lands natural reforestation will have a good chance; the public cannot require more of the private owner than is economically practicable. However, it is expected that once the owner enters upon a policy of holding his logged lands for future growth, and pays taxes and protection charges thereon, he is likely to adopt additional measures of scientific forest management merely as a matter of self-interest.

7. *Amount of Annual Land Tax.* An annual land tax of 5 cents per acre for all lands listed as reforestation lands is proposed and the amount should be stated in the bill. This seems to be about the maximum that the average of these lands can pay annually and even more than the poorest quality of forest land can well afford to pay.

8. *Amount of Yield Tax.* It is recommended that when any forest crop is

harvested from lands listed under this legislation a yield tax be collected to the extent of 10 per cent of the value of its gross yield. It is calculated that on the average the annual land tax with compound interest plus the yield tax will amount to about 25 per cent of the gross receipts from the crop.

9. *Optional Contract Feature.* In order to give those contemplating the investment of capital in timber growing some assurance that their liabilities for taxes will remain constant during the long period required to grow a timber crop, it is proposed that the legislation allow the state to enter into a contract with any owner of reforestation land guaranteeing on its part that the tax liability will remain constant for a period long enough to mature a forest crop and specifying that the owner on his part will take such additional steps as the State Board of Forestry may specify to make sure that the lands are kept in productive condition. It is recommended that this contract feature be not made effective

until there has been more experience under the new law and specifically until March 1, 1933. Meanwhile, it will serve as recognition of a principle desirable in legislation affecting crops that take a half century or more to grow.

10. *Administration of Law.* It is proposed that the State Tax Commissioner be the agency responsible for the tax status of reforestation land and approve the lists to be affected by such legislation, these lists to be initiated by the State Board of Forestry. Also the State Tax Commissioner should conduct the hearings at which either the county assessor, the owner, or the State Board of Forestry could make objection to the classification. The State Board of Forestry would be responsible for drawing up rules for the care and protection of these lands and for seeing that the fire patrol required by law is in effect. That Board should also be the agency of the state to enter into contracts with owners when they are desired.



# OUR IDLE LAND PROBLEM—WHAT ARE WE DOING ABOUT IT?

By NELSON C. BROWN

*New York State Reforestation Commission*

**M**ARK TWAIN once said that he always heard a lot of talk about the weather but as far as he could learn nothing much was ever done about it. There is a lot of talk about tree planting. It is the one phase of forestry easily understood and accepted by the general public. But in spite of the talk and printed word, little has been done about it. And yet the figures of areas needing planting are staggering. The Forest Service tells us there are 81,000,000 acres of idle land. A more recent compilation for 1928 by the American Tree Association places this figure at 107,000,000 acres. The first figure was compiled several years ago and the amount of this type of land is increasing rather than decreasing. Possibly it is far greater even than the latter estimate.

If these figures are even approximately correct they mean that about one-fifth of our total forest area is in the "desert" class—an unproductive waste—a sorry commentary on our American efficiency, progressiveness, and thrift. What is being done about it?

The Forest Service states that in all of the years up to and including 1925, a mere 1,626,000 acres have been planted. In 1927 about 90,000 acres of trees were planted. At this rate, if there are 81,000,000 acres of idle lands, it would require just 900 years to complete the task. And this would not take care of the current accumulation.

Perhaps foresters do not believe that a great planting program is necessary; certainly they have taken no active leadership in a nation-wide move in this direction. Possibly some of the idle land is not worth planting. In the three states of Minnesota, Wisconsin, and New York, commissions are at work on the problem. Michigan has taken a really notable step forward in its Land Economic Survey to find out the real facts in the case. Mr. Philip Ayres tells us there are said to be 10,000,000 of idle or "slacker" acres in New England. Yet little has been done to analyze and check up the accuracy of these figures and perhaps to do something about it.

Forestry officials of 38 states estimate large areas of idle forest land in need of planting, generally from 500,000 acres to several million acres or more in each of these states. It is increasing in volume instead of decreasing. Much of it is abandoned farm land which no longer pays an adequate return under agriculture.

New York is now said to have 5,000,000 acres of abandoned farm land and this is increasing at the rate of 250,000 acres a year. It has been accumulating since 1880.

Much land, especially farm land, has been abandoned in the South, ever since the Civil War. There are also immense areas of cut-over forest land that are not restocking to desirable species. Georgia

has 6,500,000 acres of idle land, North Carolina 4,200,000, Florida 5,300,000, and Louisiana 5,000,000.

Even the rich agricultural states of the Middle West are seriously affected. Ohio is reported to have 1,750,000 acres of idle forest land, Indiana 1,000,000, and Illinois 1,577,000. Even Iowa has 1,000,000 and Minnesota 5,500,000 acres.

Assuming these estimates to be exaggerated, they are still of enormous proportions, and the "sick patient" doesn't seem to improve. The situation is becoming worse rather than better.

What is the nature of this land? Who owns it? What is its status as to tax delinquency? What is the likelihood of reversion for non-payment of taxes? Can it be purchased in sufficiently large administrative units? What part does the general tax question play in the situation?

What is the obligation of the federal government or individual states to plant up this land? In the matter of public benefits, if private enterprise is not sufficiently attracted to do the necessary thing, the burden must rest on the political units. True, this appears to be a form of socialism or governmental paternalism—but very necessary just the same. What part should the counties, towns, cities, and villages, or even the schools and water companies, play in this program?

New York planted 25,000,000 trees in 1928, but if it is true that there are 5,000,000 acres of idle land in the state it would require just 200 years to put this forest capital to work at this rate of planting. Plans are under way to increase the annual output of New York's tree nurseries from 30,000,000 to about 200,000,000 trees. Even this would not

be excessive. Seeds and good seeds are available. The woods are literally full of them. Both Pennsylvania and New York are showing the way in the matter of proper seed selection. Many states have as many idle acres or even more than Pennsylvania or New York. What are their plans for attacking this uneconomic situation? Vast areas of idle lands may pay no taxes—may become a liability instead of an asset. And is public sentiment in tune with a great expansion in reforestation?

To sum up the problem, surveys should be made to determine what has been accomplished to date. These should include information as to the species that have been most successfully used, the cost of planting under different conditions (based upon actual experience), the difficulties in seed selection, the use of exotic versus domestic species, and the lessons that the older plantations teach. Then we should examine the facts as to what ought to be done, including the actual amounts of idle land in each state which are not restocking to desirable species and such other information as ownership, values, plantability, accessibility, and productivity.

It is doubtful if the present available figures regarding these lands are worth much. They are significant, but they can not form the basis for any real solution because of the generalities and probable inaccuracies. A collection of facts on which we can formulate needs and policies is urgently needed. Michigan, Minnesota, and New York have made a little start in this direction, but what about all of the other states in which the same problem exists?

The appointment of special commissions to study the problem may be advis-

able. Continually improved statistics collected with the earnest coöperation of state foresters, agricultural economists, land specialists, and others should be helpful.

Before any great extension in our planting program takes place it is most advisable to find out just where we stand. We must have the facts or at least a nearer approximation to them than is now available. They can be obtained. It is a challenge to the best thought in the forestry profession.

Should not the foresters of the country individually and collectively as a society make a careful study of this big economic issue and recommend some definite action to be taken by the individual states and the federal government? If they do not take the leadership, who can be expected to?

The proposed survey should not include lands restocking naturally with desirable species, but should check existing estimates of our idle lands and obtain additional basic facts concerning them. For example, maximum land values for reforestation should be established for each region and perhaps for each state. Undoubtedly under present conditions millions of acres could be purchased for planting at less than \$5 an acre. What maximum initial capital investment can plantations stand in the different regions? Foresters are not all agreed on this point.

What is the minimum administrative unit that should be purchased for federal or state ownership and management? County, municipal, or school forests could probably be in smaller units than those administered by the federal or state governments.

What regions present the most urgent needs for planting? Expressed in terms

of volume of land available for planting, reasonableness of purchase price, need for future timber supplies, urgency of tax delinquency, they could probably be classified in the following order of importance:

Northeast, from Maryland to New York and New England.

The three Lake States.

South, including the states along the Atlantic and Gulf Coast from Virginia to Texas, inclusive.

Middle West from Ohio to the Rocky Mountains.

Rocky Mountain Region.

Pacific Coast.

The following is a suggested outline for such a survey:

1. What has been done.
  - A. Area already planted by the states, government, lumber companies, and other organizations.
  - B. Trees successfully used to date (by regions).
  - C. The cost of planting trees under different conditions (based upon actual experience).
  - D. The difficulty or success in seed selection.
  - E. Exotic versus domestic species for reforestation.
  - F. Results of older plantations.
2. What ought to be done.
  - A. Area of idle land in the different states.
  - B. Ownership.
  - C. Values.
  - D. Plantability and productivity.
  - E. Accessibility.
  - F. Likelihood of tax reversion.
3. What can be done.
  - A. Emphasis should be placed upon the best available



areas. The cheapest and best land should be planted first, also the most accessible and the sites which will produce the best forests.

#### 4. Who should do it.

A. A brief analysis of the obligation and responsibility resting upon the government, states, municipalities, counties, schools, lumber com-

panies, pulp and paper and other wood-using industries, water power corporations, water supply and reservoir people, farmers, and other classes of companies or individuals.

Table 1 presents a recent compilation of the major facts about the idle forest lands, together with the activities of each state in nursery capacity, output, and planting programs.

TABLE 1  
SUMMARY OF THE IDLE LAND SITUATION AND REFORESTATION ACTIVITIES BY STATES, 1928

State	Idle land, acres	No.	Nurseries <sup>1</sup>		Actual output, no. of trees	Area planted		Principal species planted <sup>2</sup>
			Area, acres	Contents, no. of trees		to date, acres	1928, acres	
Alabama	1,800,000	1	40	100,000	50,000	200	44	Catalpa, B. Walnut, Locust.
Arizona	150,000	..	..	.....	.....	.....	.....	.....
Arizona	Not known	..	..	.....	.....	30	30	Not given.
California	2,000,000	1	30	.....	60,000	55,520	7,789	Redwd., Coulter Pine.
Colorado	1,290,485	..	..	.....	.....	34,576	160	Cottonwd., W. Ash, A. Elm, Ru. Olive, Willows.
Connecticut	No figures	2	..	1,000,000	500,000	.....	1,650	Red Pine, W. Pine, Scotch Pine, White Spruce, N. Spruce.
Delaware	150,000	1	4	.....	.....	500	66	Loblolly Pine.
Florida	5,300,000	1	4	60,000	60,000	.....	.....	Longleaf Pine.
Georgia	6,500,000	1	10	.....	300,000	.....	300	.....
Idaho	3,966,000	1	40	1,500,000	500,000	3,000	.....	B. Locust, B. Walnut, W. Ash, N. Maple, Ru. Olive, Jack Pine.
Illinois	1,577,663	..	..	.....	.....	30,000	.....	W. & R. Pine, Tulip Poplar, W. Ash, Sycamore, Catalpa, R. Gum, B. Locust, B. Walnut.
Indiana	1,000,000	1	12	2,500,000	600,000	1,500	500	W. & R. Pine, N. Spruce, B. Locust, Oak, B. Walnut, Y. Poplar.
Iowa	1,000,000	1	10	300,000	250,000	.....	1,575	B. Walnut, W. Pine, N. Spruce, Cottonwd., W. Cedar.
Kansas	.....	1	60	.....	.....	.....	1,025	R. Cedar, Walnut, Pecan, W. Elm, Hackberry.
Kentucky	1,900,000	1	15	500,000	200,000	.....	160	W. & R. Oak, Tulip Poplar, B. Walnut.
Louisiana	5,000,000	1	5	2,000,000	2,000,000	19,540	2,824	Longleaf, Loblolly, Shortleaf, Slash Pines, Oaks, Ash, Elm.
Maine	1,000,000	1	2½	300,000	125,000	50,000	2,000	W. Pine, Spruce.
Maryland	350,000	1	10	1,000,000	500,000	1,500	350	W., R. and Loblolly Pines, Scotch Pine, N. Spruce, Tulip, R. Oak, Ash, Walnut.
Massachusetts	1,000,000	5	41	20,000,000	4,000,000	39,000	3,700	W., R., and Scotch Pine, N. and W. Spruce.
Michigan	6,000,000	1	20	27,000,000	12,000,000	47,000	11,124	W., R., and Jack Pine.
Minnesota	5,500,000	..	..	.....	.....	.....	.....	.....
Mississippi	3,000,000	..	..	.....	.....	.....	.....	.....
Missouri	None	1	2	100,000	.....	2,000	50	W. Pine, N. Spruce, Wes. Y. Pine, W. Cedar, Oaks, Walnut, Locust.

<sup>1</sup> 34 states have nurseries.

<sup>2</sup> B. = Black; W. = White; A. = American; Ru. = Russian; N. = Norway; R. = Red; . = Yellow; D. = Douglas; S. = Scotch; P. O. = Port Orford; Wes. = Western.

TABLE 1—*Continued*

State	Idle land, acres	No.	Nurseries <sup>1</sup>		Actual output, no. of trees	Area planted		Principal species planted <sup>2</sup>
			Area, acres	Contents, no. of trees		to date, acres	1928, acres	
Montana .....	13,198,000	1	16	.....	2,000,000	51,174	3,707	Wes. Y. Pine, Jack Pine, Scotch Pine, W. and Blue Spruce, Ru. Olive.
Nebraska .....	.....	..	..	.....	.....	213,982	.....	.....
Nevada .....	100,000	..	..	.....	.....	100	.....	.....
New Hampshire .....	1,723,575	1	257	7,000,000	2,000,000	12,471	1,700	W. and R. Pine, W. and N. Spruce, W. Ash.
New Jersey .....	1,400,000	1	10	4,000,000	3,000,000	20,000	1,000	R. and W. Pine, Scotch Pine, N. Spruce, D. Fir.
New Mexico .....	500,000	..	..	.....	.....	.....	.....	.....
New York .....	5,000,000	3	214	90,000,000	25,000,000	150,000	25,000	W. and R. Pine, N. Spruce, W. Spruce, European Larch.
N. Carolina .....	4,200,000	1	9½	350,000	200,000	1,792	595	Loblolly, Longleaf, Short- leaf, N. Spruce, W. Pine.
N. Dakota .....	.....	1	20	600,000	.....	.....	50	.....
Ohio .....	1,750,000	3	50	11,000,000	3,100,000	14,104	3,100	R. and W. and Scotch Pine, N. Spruce, B. Wal- nut, Ash, Oak, Tulip.
Oklahoma .....	.....	1	4	60,000	40,000	1,100	10	Scotch, W. Y., Jack, Loblolly Pine, A. Elm, B. Walnut, Ash.
Oregon .....	.....	1	..	.....	750,000	.....	.....	D. Fir, Y. Pine, Port Orford Cedar, B. Lo- cust, Green Ash.
Pennsylvania .....	3,500,000	5	134½	46,196,388	14,168,000	72,003	11,998	W. R. S. and P. Pine, N. and White Spruce, Red Oak, Europ. Larch.
Rhode Island .....	.....	..	..	.....	.....	.....	.....	.....
S. Carolina .....	3,000,000	..	..	.....	.....	66	.....	.....
S. Dakota .....	50,000	..	..	.....	.....	133,738	.....	.....
Tennessee .....	1,500,000	1	38.65	91,800	.....	.....	105	B. Locust, Y. Poplar, Jap. Larch.
Texas .....	4,000,000	2	½	800,000	800,000	4,000	500	Longleaf Pine.
Utah .....	100,000	..	..	.....	.....	5,000	.....	.....
Vermont .....	1,000,000	2	32	15,000,000	2,000,000	14,000	2,000	R. and W. Pine, N. and W. Spruce, Eur. Larch.
Virginia .....	1,500,000	2	..	.....	50,000	.....	50	Loblolly, Shortleaf, W. and R. Pine, B. Locust.
Washington .....	6,271,000	1	3	.....	.....	10,000	3,000	D. Fir, Western Spruce, P. O. Cedar.
W. Virginia .....	700,000	1	6	400,000	400,000	.....	400	R. and W. Pine, N. Spruce.
Wisconsin .....	10,000,000	1	17	.....	2,000,000	4,000	2,000	W. and R. Pine, N. and W. Spruce.
Wyoming .....	10,400	..	..	.....	.....	.....	.....	.....
Total .....	107,987,123			232,878,188	76,653,000	991,896	88,462	

<sup>1</sup> 34 states have nurseries.<sup>2</sup> B. = Black; W. = White; A. = American; Ru. = Russian; N. = Norway; R. = Red; Y. = Yellow; D. = Douglas; S. = Scotch; P. O. = Port Orford; Wes. = Western.

# COST OF BLISTER RUST CONTROL WORK

## A "CARRYING CHARGE" IN THE PRODUCTION OF WHITE PINE

By C. C. PERRY

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**W**E ARE living in an age of campaigns of *prevention*. Health associations of one sort or another, all over the land, are urging annual or semi-annual physical examinations for the detection of human ailments which can be prevented, alleviated, or postponed by timely medical attention. In the business world, companies insuring properties against fire have made vast strides in securing the wide use of fire-proof building materials and in the installation of fire prevention equipment, such as automatic water sprinklers. In agriculture, the timely and thorough application of insecticides and fungicides has long since become an accepted practice for the prevention of crop damage. In the field of forestry, cooperating agencies in Massachusetts have been conducting experiments which already bid fair to change completely the method of protecting forests from fire, by supplementing the present system of fire suppression with a system of fire prevention through education and periodic patrol. In other phases of forest protection, the wisest policy seems to be to take measures to prevent further damage to forest crops by insect and fungous pests. In figuring the cost of such preventive measures, the charges must be considered not on the basis of insurance premiums for possible crop replacement, but as annual charges for the prevention of crop damage.

The damage caused by the white pine blister rust, *Cronartium ribicola* Fischer indicates conclusively that plans for the future production of northern white pine, *Pinus strobus* L., must include provision for the prevention of local damage by this disease. Introduced into this country thirty years ago, the rust has now become generally distributed on native white pine throughout New England and New York. Also it is established in Pennsylvania, New Jersey, Michigan, Wisconsin, Minnesota, and Washington, and has recently been found in Idaho and Oregon. It is generally prevalent in the provinces of Quebec, Ontario, and British Columbia, while scattered infections have been found in Prince Edward Island, New Brunswick, and Nova Scotia. Even the most skeptical must admit that the disease causes severe damage to merchantable timber as well as to young pine. Where the disease is not yet under control, reproduction of white pine has been seriously interfered with because of its ravages. Such a situation is a matter of prime importance in any consideration of reforestation in the white pine regions.

The encouraging fact, however, is that intensive experimental work has demonstrated that in the eastern United States the disease can be controlled effectively and at a reasonable cost. This expense must be considered merely in the light of an added cost of growing the crop of



pine timber, and included in the category with necessary expenditures for fire prevention, precautions against grazing, prevention of insect depredation, and other hazards. In other words, the cost of protection against blister rust is a "carrying charge" in the business of growing white pine timber. When so considered, white pine can be grown as a commercial crop with a certainty that it will be matured and harvested without loss from blister rust, and with no appreciable reduction in the profit on the investment.

The practice in protecting stands of white pine from blister rust is to eliminate all *Ribes* (currant and gooseberry bushes) that can be readily located by a thorough search within 200 to 300 yards of the pine to be protected. Large scale experiments and extensive practical experience have demonstrated that under eastern conditions this practice is entirely feasible and gives adequate protection to the white pine stands so treated.

The exact width of the *Ribes*-free<sup>1</sup> safety zone around the pine stand in any particular instance depends upon many conditions, such as exposure, the presence or absence of a screen of vegetation, relative elevations, and other factors. The maximum width required, however, does not exceed 900 feet under average forest conditions in the northeastern states.<sup>2</sup>

<sup>1</sup> By *Ribes*-free is meant a condition as free from *Ribes* as is economically possible. It is humanly impossible as well as impracticable, to obtain an absolutely *Ribes*-free condition in one search of any area.

<sup>2</sup> Cultivated black currants (*Ribes nigrum* L.) are particularly susceptible to blister rust and may be dangerous within a mile of a white pine stand. The removal of such plants is a regulatory function of state pest control departments. Many states have declared the black currant a public nuisance and undertaken its eradication.

The acreage involved in this protective zone, is an important factor influencing the cost of control work. Other factors affecting the cost are the abundance, location, and species of *Ribes* growing on the control area; the nature of the undergrowth; the general topography of the country; and the type of labor available to perform the necessary field work. With all these factors to be considered, it is quite apparent that it is rather difficult to arrive at a figure representing the average cost of control work which will be applicable on any specified area. It is a fact, however, that the average cost of *Ribes* eradication work performed on areas aggregating over 4,725,000 acres in the New England States during the period from 1922-1927 inclusive was but 13.3 cents per acre of land examined.<sup>3</sup>

This figure represents the cost of initial control work. Even with the best work in the field, some of the bushes will be broken off leaving pieces of the crowns from which sprouts will develop; a few bushes may be overlooked entirely; and it is also true that some of the seedling bushes, too small to be noticed in the first working of an area, may eventually attain sufficient size to be a menace. A second examination of some sort (it may only require a mere re-checking of parts of the entire area) may be necessary, therefore, in from five to seven years after the initial examination. The cost of this second working of the area should be much less than the cost of the initial *Ribes* eradication work, for the reason that fewer *Ribes* bushes will be found and usually only a portion of the original area will require attention. Data which have been

<sup>3</sup> Data furnished by Office of Blister Rust Control, Bureau of Plant Industry, U. S. D. A., February, 1928.

recorded as the result of re-eradication work in two towns in New Hampshire indicate that the cost of the second working did not amount to more than one-half the cost of the first operation. In this particular instance, the average cost per acre of land examined in the initial control work on an area of 30,051 acres was 15.5 cents whereas the average cost of the second examination of the same area was 6.9 cents per acre, or less than one-half the original cost.\*

Later on, possibly after another five to seven-year interval, it may be necessary to go over a part of the ground a third time. The cost of this examination, if necessary at all, should certainly not amount to more than one-third of the original cost. After this, it is unlikely that further control work will be necessary during the remainder of the rotation.

In order to illustrate more clearly that the added costs of systematic blister rust control work amount to but a few cents per acre per year, calculations have been made and are presented herewith. As a basis for these computations, theoretical blocks of pine of from 50 to 1000 acres have been considered, and calculations made to determine the acreage in a protection zone 900 feet wide around the pine block in each case. Then, on the basis of the total area to be examined for *Ribes*, that is, the block area plus the protection zone area, the total cost of the first, second, and final examinations for *Ribes* has been computed, assuming 30, 15, and 10 cents, respectively, as the average per acre costs of the three operations.

\*Figures from tabulations of field data furnished by L. E. Newman, Agent, New Hampshire Forestry Commission, Concord, N. H., February, 1928.

The length of the rotation for the pine crop has been arbitrarily chosen as 50 years, although it has been demonstrated that in some instances the financial rotation of the species lies between 50 and 55 years. On the basis of the 50-year rotation, the costs have been computed at 5 per cent compound interest, and the accumulated costs at the end of the rotation thus arrived at.

These figures of accumulated costs, based as they are on compound interest, represent a fair estimate of the maximum average cost of protecting pine areas of specified size from blister rust damage. Many factors involved will tend to lower the average costs. By a further step in the calculations, it is possible to determine by the use of annuity tables the actual annual expenditure required to equal these accumulated costs. In other words, the actual annual carrying charge which will provide the necessary protection against the rust, at least in the New England states, has been ascertained. In the table on page 53 the annual charges per acre of white pine protected are indicated for different sized lots.

From the same calculations, there has been constructed the graph shown in Figure 1. From this curve, the cost per acre per year for any sized pine lot from 50 to 1000 acres can be readily determined. When extended beyond 2000 acres, the "curve" becomes practically a straight line indicating a cost of 3 cents per acre per year.

These figures indicate clearly the entire practicability of blister rust control work on average areas in New England. The maximum of protection (900-foot safety zone) can be obtained for the entire rotation for the equivalent of an annual expenditure of from 4 to 12

TABLE 1  
ANNUAL "CARRYING CHARGES"<sup>a</sup>

Area in acres in white pine block	Annual charge per acre of protected pine
50.....	\$0.121
60.....	.110
70.....	.102
80.....	.096
90.....	.091
100.....	.087
200.....	.066
300.....	.057
400.....	.053
500.....	.049
600.....	.047
700.....	.046
800.....	.044
900.....	.043
1000.....	.042

cents per acre, depending on the size of the pine area to be protected. The larger the area, of course, the smaller the carrying charge per acre, due to the smaller proportion of the area in the safety zone. Such costs are far from excessive when considered on the basis of annual carrying charges. Obviously, a poorly stocked stand may not be able to carry even the most nominal charge, whereas medium to fully stocked stands will carry the charge without seriously affecting the final net return. It can properly be urged, therefore, that provision should be made for such prevention insurance in projects re-

<sup>a</sup> The figures in this table have been arrived at by the use of a general formula, the derivation of which follows:

Where:

The lot area (pine area in acres) = L. A.

The protection zone (900 feet wide) area in acres, from trigonometrical calculations =

$$58.42 + .0826\sqrt{L. A. \times 43560}.$$

The initial per acre cost of removing Ribes = I. C.

The second per acre cost of removing Ribes = S. C.

The last per acre cost of removing Ribes = L. C.

\$1 @  $p$  per cent compound interest for 50 yrs. =  $1.0p^{50}$ .

\$1 @  $p$  per cent compound interest for 45 yrs. =  $1.0p^{45}$ .

\$1 @  $p$  per cent compound interest for 40 yrs. =  $1.0p^{40}$ .

Then:

The total cost of protection at the end of the 50 year roation =

$$\begin{aligned} & [L. A. + (58.42 + .0826\sqrt{L. A. \times 43560})] \times (I. C. \times 1.0p^{50}) + \\ & [L. A. + (58.42 + .0826\sqrt{L. A. \times 43560})] \times (S. C. \times 1.0p^{45}) + \\ & [L. A. + (58.42 + .0826\sqrt{L. A. \times 43560})] \times (L. C. \times 1.0p^{40}). \end{aligned}$$

And then where:

The annuity producing \$1 in 50 yrs. =  $\frac{.0p}{1.0p^{50} - 1} = T.$

By factoring we have the general formula:

$$\frac{\text{The total annual charge} = [L. A. + (58.42 + .0826\sqrt{L. A. \times 43560})] \times [(I. C. \times 1.0p^{50}) + (S. C. \times 1.0p^{45}) + (L. C. \times 1.0p^{40})] \times T.}{L. A.}$$

And:

The annual charge per pine acre protected =

$$\frac{[L. A. + (58.42 + .0826\sqrt{L. A. \times 43560})] \times [(I. C. \times 1.0p^{50}) + (S. C. \times 1.0p^{45}) + (L. C. \times 1.0p^{40})] \times T.}{L. A.}$$

At 5 per cent interest and control costs of 30, 15, and 10 cents per acre, this formula reduces to  $\frac{.0262[L. A. + (58.42 + .0826\sqrt{L. A. \times 43560})]}{L. A.}$



lating to the future management of white pine in New England.

In conclusion, it can be stated as a fact beyond dispute, that it is vitally important in New England to protect not only the present white pine crop from blister rust, but also to extend such protection

duction of white pine timber; with its "summer playgrounds," many of which are ranked among the "show places of America" largely because of the picturesque quality of white pine—New England is indeed vitally concerned in the prevention of further damage from this dis-

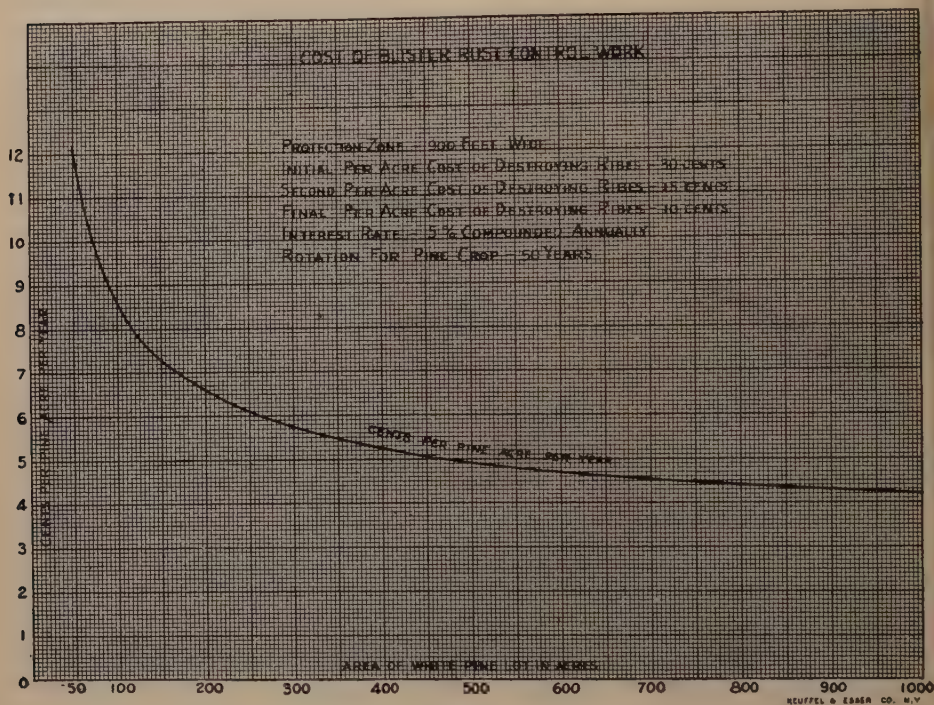


FIGURE 1.

as far as possible to lands which are potential pine sites, in order to prevent this destructive disease from destroying the seed trees and pine reproduction now on such lands. With so much of its soil better fitted for the growth of white pine than of any one other tree; with many of its industries and with thousands of its inhabitants dependent upon the continued pro-

duction of white pine timber; with its "summer playgrounds," many of which are ranked among the "show places of America" largely because of the picturesque quality of white pine—New England is indeed vitally concerned in the prevention of further damage from this disease. In combating the rust, study has determined a simple and feasible method of control; the application of control measures has been found thoroughly effective; and the results of extensive experience prove conclusively that white pine on the average area can be protected against this disease at a very reasonable charge of a few cents per pine acre per year.

# FACTORS AFFECTING THE REPRODUCTION OF HARDWOOD FORESTS IN SOUTHERN CONNECTICUT<sup>1</sup>

By JAMES L. AVERELL

*Junior Forester, Lake States Forest Experiment Station*

**I**N SOUTHERN CONNECTICUT, within a radius of fifteen miles of New Haven, are some 6000 acres of hardwood forest land which have been under the continuous care of a forester for the past twenty years. Fires and domestic animals have been kept out and various silvicultural methods tried in an effort to make this area produce the best forest crop possible, while yet serving as a watershed for the supply of the city of New Haven.

At the end of the twenty-year period, an intensive study was made of this area to determine the influence of various factors affecting reproduction. The general conclusion reached was that the method of cutting, whether partial or clear cutting, has less influence on the reproduction of hardwood stands in southern Connecticut than is attributed to it. Other factors, such as seed supply, germination, and survival of young plants, tend to a greater extent to determine its success or failure.

The most important factors found to be affecting reproduction were as follows:

*Origin of Reproduction.* Reproduction of sprout origin is no longer considered by foresters to be desirable in southern New England. This is due chiefly to the extermination of the chestnut by the

blight disease. The great abundance and ready sale of this tree made it of outstanding economic value; while its rapid growth and prodigious sprouting capacity gave it paramount silvical importance. The region received the name of "Sprout Hardwood" from the capacity shown by this dominating tree for sprouting. Other species were considered of very secondary importance in comparison.

With the disappearance of the chestnut, the name "Sprout Hardwood" becomes a misnomer. Southern New England is now no longer entitled to such a name, any more than are the oak forests of the Ohio valley or the hardwood stands in the southern Appalachians. For it is safe to say that the sprouting ability of the remaining species in southern New England is no better than that of the same species in the regions to the south. If any preference for the title can be cited, it is in favor of the latter regions, as the quality of sprout maturing in New England is generally poorer than that produced further south. This is due to the slower rate of growth found in the north, which causes less rapid enclosing of the parent stump and marked lengthening in rotation to tie or sawlog size. These observations were made by the writer in extensive travels through the hardwood forests of North Carolina, Kentucky, Ohio, and West Virginia.

<sup>1</sup> Taken from the author's M. F. thesis in the library of the Yale School of Forestry.

The temperature and humidity in southern New England, while very likely less favorable to rotting than further south, are sufficiently so to limit the rotation of hardwood sprouts to sixty or seventy years. Beyond this period, the rate of rotting in most cases becomes so high that the market value of the sprout timber diminishes. This susceptibility to rot and liability to wind-throw due to poor root distribution have brought sprout origin into disfavor in recent years. Thus the disappearance of the chestnut from the region has made the name "Sprout Hardwood" of historical interest only, and further, has completely changed the attitude of foresters toward sprout reproduction. Any method of cutting which tends to discourage sprout formation and favor seedlings and seedling sprouts is now desirable.

Some species sprout much better than others, as is indicated in the following tabulation:

Species	Per cent of stumps failing to sprout	Number of stumps examined
Red maple .....	0	237
Chestnut oak .....	0	194
Hard maple .....	0	23
Beech .....	9.1	22
Red oak .....	9.4	106
White ash .....	11.3	44
White oak .....	11.4	123
Scarlet oak .....	17.2	87
Black oak .....	32.3	62
Hickory .....	41.8	67
Black birch .....	66.1	68
		1033

Why there should be such a variation among species is not clear. Physiologists consider it due to inherent qualities within the plant.

*Seed Supply.* Since sprouts are no longer desired, the question of seed supply

assumes greater importance than before. Leffelman and Hawley (1) have shown that there are three desirable forms of reproduction, namely, seedling, seedling sprout, and multiple seedling sprout, all of which originate from seed or seedlings.

Seed supply depends chiefly on seed production, seed dissemination, insect damage, and rodent activity. The oaks which are now the most abundant and generally valuable trees in the region produce seed only in their so-called seed years. This intermittent production has a direct bearing on reproduction and cutting practice, but no one has studied satisfactorily its cause. A record of the years in which species had produced acorns abundantly would not only be of value in studying periodicity of seed production but would furnish important data in investigating reproduction cuttings. Yet no such data are recorded in southern Connecticut, even though they would be comparatively easy to obtain. For instance, the year 1925-26 was a decided red oak seed year, and the scarlet oak mast was also very heavy, while chestnut oak and white oak were only medium in comparison and black oak produced practically no acorns at all.

It is believed by some that such information on past years can be obtained by counting the annual rings of a large number of seedlings and taking the years when the greatest number of each species originated as the seed years. This at first seems possible, but investigation showed that such a method is subject to marked inaccuracies and is not practical as a field method. Microscopic examination of cross-sections of seedling stems is the only accurate method and this is hampered by a scarcity of speci-



mens which are unquestionably seedlings and not seedling sprouts.

Among the most important agents influencing the seed supply of oak are curculios, insects which lay their eggs in growing acorns. The larvæ later develop at the expense of the embryos. The amount of damage they do to an acorn crop is very great, as is amply proved by the large number of empty seed coats found on the forest floor pierced with tell-tale exit holes of curculios.

The rodents form a group of agents whose influence on the seed supply is also very great. Squirrels, field mice, and shrews all find much of their annual subsistence in acorns. Their work can easily be identified, for the method of each in getting the food out of the shell is very characteristic. The squirrel removes the seed coat in large pieces, in much the same fashion as an orange peel would be taken off, and eats the embryo. With the mouse, a hole is gnawed through the seed coat large enough to permit the embryo while still in the shell to be reached and devoured. The shrew also makes a hole through the shell, but leaves part of the cotyledon in the acorn. Of the three, the squirrel consumes the greatest amount of acorns, if the number of shells on the forest floor be used as an indicator.

One of the characteristic differences between a mouse and a shrew is that the former is a vegetarian while the latter is carnivorous. This fact accounts for the habit of the shrew in leaving part of the cotyledon in the shell, for he chooses only wormy acorns and is after meat when digging out the embryo. Thus he does not destroy acorns of value, but rather helps to keep down the curculios.

Southern New England is not unique in this question of biotic influence on seed supply. Troup (2) states, "The acorns of most of the better known Indian oaks are much subject to the attack of insects. They are also eagerly devoured by birds and by bears, squirrels, rats, and other animals. These agencies often have a very prejudicial effect on natural reproduction."

But not all of the acorn crop is destroyed, in spite of its many enemies. In the forests, areas are discovered which have a number of good acorns on them. A few shells showing mice and shrew work are found; sometimes quite large piles of squirrel shells lie nearby. It was thought that perhaps these surviving acorns were distasteful to rodents through excessive acid content or some other chemical difference. However, this was soon proven not to be the case, since the squirrels on the Yale campus ate several handfuls of them with great gusto. Many places under observation showed a total destruction of the crop. For example, certain scarlet oak trees near Lake Wintergreen had produced abundantly and the ground under them was literally covered with acorns in early November. Five months later, a half hour's search yielded a single viable survivor; only cups, shells, and curculio-bored seed coats were left. Again, an area six miles to the northeast had received two years ago a partial cutting of its red oak stand. From a silvical standpoint, it was ready for a heavy fall of acorns to start reproduction. This year the red oak seed crop was good, yet a diligent search yielded only a few acorns capable of germinating. The work of squirrels was in evidence everywhere.

*Seed Germination.* Seed that is fortunately overlooked by insects and rodents constitutes the small percentage of the original crop which may germinate. With the acorns, leaf litter is probably the most important factor influencing germination. It serves as a cover which keeps moisture and temperature conditions favorable. Red oak acorns lying in moist depressions, yet uncovered with litter, were observed just after the snow had gone to be swelling and bursting with the rising temperature of early spring. Those under the leaf litter had not responded to the change in air temperature. Most of these early germinators were caught by the frost and the exposed portion of the embryo browned. The browning led to rotting which spread throughout the embryo and killed it. Leaf litter thus prevents unseasonable germination and keeps moisture conditions favorable. The white oak group which germinates in the fall is influenced in the same way as the red oak group which holds over till spring.

*Soil.* As soon as the radicle of the germinating seed touches the soil, the latter begins to play its part in the success or failure of reproduction. Connecticut soil is known to be chemically favorable to tree growth. The physical characters vary, due largely to its glacial origin.

The surface layer of this glacial soil is dependent for its moisture on the compactness of the bottom horizon or zone. The latest soil classification divides soil into three major horizons, separated on the basis of color and structure, or both. If the bottom horizon is compact, the surface soil will be moist, regardless of its texture, but should the bottom horizon be loose in structure, it tends to cause

rapid drainage, which deprives the upper horizons of their moisture. This feature is believed to be responsible for certain associations of the tree species. But of equal importance is the depth of soil, which Leffelman found to be proportional to the site quality.

Soil seems to influence reproduction only in a selective way, determining which species can grow on an area and how large and fast they will develop. A common example is chestnut oak on the thin-soiled ridges. There are practically no areas in southern New England that one can say have failed because of the soil to reproduce to tree growth of more or less desirable species.

*Climate.* A study of U. S. Weather Bureau records for New Haven brings out two facts which emphasize the relationship between climate and hardwood reproduction in this region. First, the temperature for any period varies from the normal for that period so little that temperature may be disregarded in comparing reproduction resulting from cuttings made in different years. A graph of the mean monthly temperatures for the past four years shows strikingly this lack of variation by the closeness with which the curve for each year follows that of the normal curve based on fifty years' record.

Secondly, precipitation varies sufficiently to have considerable influence on the survival of young plants. When the precipitation falls below the normal and stays below it during all the growing season as was the case in 1923, the effect on young reproduction is certain to be detrimental. Thus it may be said that temperature can be regarded as constant from year to year, but that precipitation

varies widely and can thus influence reproduction.

*Shrub Competition.* Woody shrubs constitute a cause for the failure of desirable reproduction to survive on certain areas. Leffelman has pointed out that on site I woody shrubs are found in greater numbers and growing faster than on site III. Observations by the writer not only confirm this, but indicate that the shrubs constitute a deleterious influence on hardwood reproduction for a greater length of time than on site III. Some of the plots laid out on areas cut within a year, of site III character, show a large number of woody shrubs, such as viburnum, dogwood, and hornbeam coming in. On similar sites, with a longer period since cutting, no such large number of shrubs is found. This would indicate that on poor sites the woody shrubs may start in the first year in great numbers just as on site I, but do not survive the poor growing conditions, as such species as chestnut oak are able to do. However, on the good sites the woody shrubs start the first year and remain for ten or more years as a serious hindrance to natural reproduction. Rabbits are detrimental, since they select the hardwoods as food in preference to most shrubs and thus check their height growth, which must be maintained if they are to stay in the dominant crown class.

*Rabbit Injury.* On all the areas studied, rabbits were found to be the most important single factor in retarding the growth of young hardwood reproduction. Their work consists of biting off the most vigorous stems and twigs, usually including the leader, and of eating the buds and tender tips. This

seems to be their chief source of food during winter and early spring. The presence of snow on the ground increased their working height by several feet. This pruning by rabbits is an annual affair on all the areas under observation around New Haven, for there were found old stubs as well as the fresh cuts of the past winter on many plants. The repeated pruning has given the plants a bristling appearance, and might well be termed "rabbit pollarding."

The work of rabbits is unmistakable in its character. The cut they make is diagonal across the stem and almost as clean as that made by a sharp knife. Tell-tale tooth marks are also present, especially on the thicker stems, where the rabbit evidently tried to bite through the older portion low down, but reached higher when he found it too thick and tough.

Although rabbit injury does not immediately result in the death of the plant, the mutilation of the straight stem and the loss in height increment are very important. Injured plants often make a new start from the root collar and if no rabbits returned to the area, they would continue to shoot up as vigorous seedling sprouts. But the numerous dead stubs of other years indicate only too clearly that the chances of such recovery are very small.

This detrimental work of the rabbits is not found only now and then, but is ubiquitous wherever the reproduction is not too large and is growing rapidly, producing succulent tips. To arrive at a quantitative value of this injury, use was made of a dozen permanent sample plots laid out by Paul W. Stickel two years previously to study the influence



of varying kinds of shrub growth on hardwood reproduction. On half the plots the competing brush had been cut away, which had freed the hardwood reproduction, permitting more rapid growth. On the others, increase in size was still hampered by the brush, holding the annual growth to a small amount. The total for all the plots recorded as dead was eleven per cent and included those missing from the plots. It is reasonable to assume that at least part of this was due to rabbit work. A larger percentage of plants had disappeared or died on the plots where the competing brush had been cut away, than on the plots where the reproduction had not been freed.

The rabbits are selective in their choice of food plants. If the shrub species are included in the hardwood list, the following order indicates decreasing susceptibility to rabbit damage: maples, oaks, beech, hickory, black birch, chestnut, hazel, witch-hazel, viburnum, white ash, and mountain laurel. Mountain laurel was never found injured, even though it was growing rapidly and within easy reach of the rabbits.

*Slash.* In the present study, hardwood slash had apparently no influence on reproduction, either in favoring species or in hindering growth. The common method of handling brush in this region is piling and allowing it to rot. By ten years the piles have practically disappeared. Piles vary in size but are seldom over five feet high and twelve feet in diameter when first thrown up. They rapidly sink down to within a foot or two of the ground. Brush piling sometimes takes another form, that of windrows. Neither form of piling kept the reproduction from coming through. The

only reason for piling the slash is to make room for removing the cordwood or logs.

Hardwood slash does not increase the fire hazard, for the chief fire fuel in this region is the layer of leaf litter which covers the ground. This will burn with sufficient heat to kill reproduction, regardless of whether slash is present or not.

Analysis of the data collected indicated the following facts regarding cutting:

1. In clear-cut young stands (30 years old or less), a high percentage of sprouts is the result in every case. This is an undesirable form of origin for reproduction.
2. If the rotation is extended to a sufficient age (80 years or more), clear-cutting permits plentiful reproduction of seedling or seedling-sprout origin.
3. In the age classes between 30 and 80 years, Stump sprouting is uncertain and advance seedling growth is not likely to be present in quantity.
4. The chief value of partial cutting, as indicated by this study, is that it serves as a safety measure for natural reproduction. If factors affecting seed supply, germination, and survival of young plants are not favorable at the time of cutting, there may yet be opportunity for the heavy seeded species to become established on the area. However, this opportunity may never arrive, if factors deleterious to seed supply and young plant growth are not removed.

Factors other than cutting method affecting reproduction may be summarized as follows:

1. Reproduction of sprout origin is no longer considered by foresters to be desirable in southern New England.
2. The seed supply of oaks is seriously influenced by curculio larvæ and by rodents.

3. Leaf litter has a favorable influence on germination.

4. Soil influences reproduction in a selective way by determining which species can grow on an area and how large and fast they will develop.

5. Temperature can be regarded as constant from year to year, but precipitation varies widely and can thus influence reproduction.

6. Shrub competition lasts for a longer period on the good sites than on the poor sites.

7. Rabbit injury is the most important single factor in retarding the growth of young hardwood reproduction.

8. Hardwood slash had apparently no influence on reproduction.

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## REVIEWS

**Forstliche Rundschau.** Edited by Dr. Heinrich Weber, Freiburg i. Br. *Vol. I, No. 1, October, 1928. Publ. by J. Neumann, Neudamm. Pp. 128.*

This new German forestry periodical is the successor to the "Forstliche Jahresbericht" of 40 years ago, that did not survive the war. Dr. Weber has undertaken the gigantic task of bringing in quarterly form a review of the entire field of forestry.

This first number covers not only all German literature, but also that of Denmark, Finland, Holland and its colonies, North America (English only), Sweden, Spain, and Hungary. The other countries will be covered in due course.

The reviews themselves are very brief (in the nature of things) but cover the field very thoroughly. At the close of each number is an invaluable index by authors.

The subscription price is 20 marks yearly (about \$5).

Such a digest of current literature is indispensable to the forester who wishes to be abreast of the developments in his profession.

A. B. RECKNAGEL.



**The Forests of Canada: Their Extent, Character, Ownership, Management, Products, and Probable Future.** *Prepared by the*

*Dominion Forest Service, Ottawa, for the Third British Empire Forestry Conference held in Australia and New Zealand, August to October, 1928.*

This report should be of particular interest to foresters in the United States, for various reasons. While technical forestry developments are still largely in the pioneering stage, the situation is fundamentally sound. A large proportion of the absolute forest land is in public ownership. Of the privately owned forests, ownership is rapidly becoming concentrated in the hands of the pulp and paper industry, which is beginning to acquire the viewpoint of permanent production, due largely to enormous investments in mills and in hydroelectric development. Canada now leads the United States in newsprint production, besides supplying that country with around 1.5 million cords of pulpwood annually, cut from privately owned lands, the export of raw pulpwood from Government lands being prohibited, in the interest of the home industries.

The report opens with a brief description of the three main regions of the Dominion—the Cordilleran, Great Plains, and Eastern Regions. The main types of forest growth are then outlined.

The total forest area is estimated at 1,151,454 square miles, or 32.5 per cent of the total land area of the Dominion. Of this forest area, 27.2 per cent is of merchantable timber and 48.1 per cent



is young growth, both accessible, while 24.7 per cent is regarded as unprofitable or inaccessible under existing conditions. Of the total forest area, only 7.1 per cent is regarded as of potential agricultural value. The large area of young growth and part of the area regarded as unprofitable are accounted for in large degree by the past prevalence of fire.

Only fragmentary data of a reliable character are available as to volume of stand. Of coniferous species, the estimate indicates 382.7 billion board feet of saw material, and around 800 million cords of small material. Of the saw material, there are in the Eastern Provinces 45.2 billion feet, Prairie Provinces 17.5 billion, and British Columbia 320 billion. Of the total stand of conifers for the Dominion, 98.2 billion feet are spruce and 15.2 billion are white pine.

Of the broadleaf species, the total stand for Canada is around 42 billion feet of saw timber and 1122 million cords of small material, of which much the largest single element is poplar, predominantly in the Eastern Provinces—in large degree a fire type.

The important timber species are discussed as to distribution, qualities of wood, and uses. Of 31 coniferous softwood species and 160 hardwoods, only 23 and 32, respectively, are commercially important. Conifers form over 80 per cent of the standing timber and 95 per cent of the lumber and pulpwood produced.

Of the total forest area, 90.4 per cent is still in public ownership, Dominion or Provincial. On public forest lands, the settled policy is to dispose of timber by means of licenses to cut, rather than to sell timber land outright. The respective

Governments have thus the legal power to control cutting methods.

On the basis of total timber content, 10 per cent of the forest resources of the Dominion are in private ownership, 40 per cent under Government license or lease, and 50 per cent still unalienated. Naturally the latter occupies the less accessible locations.

Existing forest legislation is summarized, and the administrative organization of each Forest Authority, Dominion and Provincial, is described.

The forest revenue accruing to Dominion and Provincial Governments is around \$17,000,000 annually. Expenditures total around \$7,000,000 in administering, protecting, and developing the forest resources.

In connection with municipal and private forestry activities the most notable fact is the rapidly increasing interest being taken by the pulp and paper industry.

There follows a description of the Canadian Society of Forest Engineers, the Association of Forest Engineers of the Province of Quebec, and the Canadian Forestry Association. The outstanding activity of the latter is educational publicity in forest fire prevention, largely through travelling lecturers who tour the back districts with motor cars and moving pictures on forestry subjects.

There is also a list showing objects and officers of the numerous associations of manufacturers of forest products throughout the Dominion.

Under "Education and Research" are listed and described the several schools of forestry and an outline is given of forest research and experimental work of a distinctly creditable character.

Due to insufficient data, no reliable estimate can be made as to total annual increment, and rate of depletion is almost equally uncertain, particularly as to losses through insects, disease, and wind. Of the accessible area, it is roughly estimated that on 665,800 square miles the forests timber, growth is offset by decay, and that on 665,800 square miles the forests are in growing condition. On the whole, natural regeneration is good, except where repeated fires have reduced the recuperative powers of the forest. Understocking is general, due to fires and cutting methods. Indications are that total depletion somewhat exceeds the increment.

The report closes with a discussion of the economic importance of the forests and forest industries in the life of Canada, with conclusions as to what steps are necessary to place production on a permanent basis.

CLYDE LEAVITT.



**A-Rafting on the Mississipp'.** By Charles Edward Russell. *The Century Co.*, N. Y. 1928. Pp. 357; illus.

This is a fascinating account of the old logging and sawmilling days on the upper Mississippi written by one who took part therein. The author, well-known as a journalist (City Editor, *N. Y. World*, 1894-1897; Editor, *N. Y. American*, 1897-1899), was born in Davenport, Iowa, in 1860 and spent his boyhood on "the River" between St. Louis and St. Paul.

Beginning with the earliest days of the steamboat before the Civil War, clear down to the close of this mighty epoch

in the "nineties," it was a time of great enterprises and glittering romance, the like of which this continent will not see again. As for the rafts, they began with crudely constructed lumber rafts propelled by huge oars, culminated in the dexterously constructed log rafts towed—that is, pushed—by specially designed raft boats, and ended with the last lumber raft, gathered from remnants left at the mills in the summer of 1915. One man's lifetime embraced the entire period, but let Russell tell the story of this raft, the last of her tribe:

"As they neared Albany, Illinois, the captain bethought him that there was living in that town a man that had a peculiar and unequaled interest in this funeral procession, a man that had played a notable part in the raft story and borne great honors in river navigation.

"He sent a yawl ashore and invited this man to come and ride upon the final raft of the Mississippi. The man came. He stood in the pilot-house of the Ottumwa Belle and held the wheel. He looked out at the scenes that had been so familiar to him, noted with the pilot's eye where the channel had changed, foretold with the pilot's sixth sense where it would make other changes. He rode as far as Davenport and saw the bridge swung for the last time on a raft-boat. He landed and had a reception from old rivermen and citizens and was escorted back to Albany.

"It was Stephen Beck Hanks.

"He had ridden upon one of the first lumber rafts that descended the Mississippi; he had piloted the first log raft. He had seen the beginning, the culmination, and the end; the whole thing had passed in one man's lifetime."

The Great Lakes states of Minnesota and Wisconsin that contributed their logs and lumber to the Mississippi were in five regions, being the basins of the Wisconsin, the Black, the Chippewa, the St. Croix, and the upper Mississippi above the Falls of St. Anthony. More than 40 billion feet, board measure, came down the river to build up the great central farming belt of our country.

"From Minneapolis to St. Louis all day sounded the buzz of saws and the rattle of logs on the runways. The crest came with 1892, and then the whole thing began to dry up and blow away faster than it had come. On a sudden we awoke to the fact that the supply of white pine Providence had so wisely bestowed upon us as a reward of merit was not inexhaustible but almost done for. One by one the mills began to be abandoned. The rafts grew fewer and fewer and were always constructed of smaller logs, until they came to be made up of material that 20 years before would have been scorned. The rafting steamers were sold into the lower river or the Ohio trade or were broken up for sidewalks.

"Long before that time the railroads had all but strangled the packet business.

"At last the great and wonderful river that had once bustled with traffic lay virtually deserted. At rare intervals an excursion steamer would wake the lonely echoes of the bluffs with an unaccustomed whistle, but mostly the broad stream flowed on, year in and year out, unruffled by a steamboat prow. The Government continued to spend money upon its improvement, much money; more money than ever before. It put in wing dams, some of them where they might be of use; it chiseled rocks on the rapids; it patrolled

the vacant waters for snags that now would never have caught anything. The 359 crossing lights between Cairo and St. Paul were burned religiously every night, but even if any of them had been in the right positions there was nothing to steer by them. It had been a great chapter in the nation's real history; also a gorgeous riot in the nation's great and always merry game of waste. It ceased with the destruction of the last of the providential pine-trees.

"The closing page of the narrative was marked with a singular reversal of what had been the normal tides of commerce as of national expansion. For about 50 years lumber moved westward from the Mississippi across the prairies, even to Denver; moved in a great stream of traffic. I went back to the river country a few years ago and found the lumber stream moving from West to East. To learn that Muscatine, Clinton, Davenport, Dubuque were now getting their lumber supplies from Oregon was a shock comparable to the upsetting of all fundamental faith in nature. On the site of a great mill at Muscatine I found a yard that dealt only in pine brought across the continent, from Puget Sound or something like that, and the world seemed all topsy-turvy as I looked at it.

"I went to LeClaire. The old saw-mill was gone. Of the town that had bustled with activity, half was dissolved away, half an inert suburb. Still the river flowed out of the mystery above the point into the mystery below the bend, and the shape of the bluffs was unchanged. But the old boatyard that had been the scene of Captain Pluck's great fight and had built so many proud vessels and played so great a part in business—



that was a waste of weeds and silent as the grave.

"In one corner was an object that seemed familiar. I made a way to it and found it a discarded pilot-house. The name board still remained, and pushing the weeds aside I traced the outlines of the name—Le Claire Belle! Often I had stood in the pilot-house with Captain Jack McCaffery and looked out upon a procession of rafts going down the river and a procession of rafting steamers ascending it for more, and this was the end of that vision.

"Not far away was a sign over a wood-yard. It read: 'Oregon Pine.'"

Russell deals biographically with many of the pilots and captains of his beloved stream. To them he assigns an almost superhuman sense of gaging the ever shifting channel and steering by night almost as well as by day. One of these heroes, Captain Van Sant, earned the name of "Captain Pluck" because of his indomitable perseverance in the face of disaster. He became Governor of Minnesota and was nearly chosen as Vice-Presidential running mate to President Roosevelt. "His profound faith," says Russell, "in the possibilities of the business, a faith in which he sometimes stood almost alone, was vindicated in other ways. In 1842, when Stephen Hanks went into the pine wilderness, there were in the whole great St. Croix region but two sawmills, one at St. Croix Falls, the other at Marine. On the Mississippi below the St. Croix there was hardly one mill that really deserved the name. Thirty years later Hanks counted 135 sawmills between St. Paul and St. Louis that he had seen erected and buzzing their way into fortune. Besides these, scores had been built above St. Paul and

on the tributary streams. Out of the great boom at Beef Slough, mouth of the Chippewa, issued now in a season from 400,000,000 to 600,000,000 feet of logs. In one season, that of 1873, 680 rafts passed the Davenport bridge and were estimated to have contained 275,000,000 feet. As sample days, on June 5 of that year 18 rafts passed the bridge; June 6, 18; June 7, 17; June 11, 16. Fifty-four acres of logs in a day. Six great lumber manufacturing points above Davenport daily consuming their quotas of logs were gages of the new empire."

Of special interest to our readers are Chapter III, entitled "The Pine Tree Eldorado," and Chapter IV, "The Lumberjack," for what they reveal of the early days of logging in the Lake States pineries. Here is Russell's vivid description of the early logging camps on the headwaters of the Mississippi:

"Sometimes one roof covered kitchen and sleeping quarters; sometimes, in later years, kitchen and dining-room were in a separate structure. A typical camp of my time had but the one building—and poor at that. In its center was an open fireplace; near-by the tables where the men were fed, and where they sat and smoked in the evening. From this extended the two wings, lined with rough bunks in tiers, one above the other. There were no mattresses; sometimes the bunks were filled with hay or straw, sometimes with cedar or hemlock boughs, and covered with blankets. For pillows the men used their coats, doubled up; sheets were unknown and the men usually slept in their clothes.

"The camp was built with its one door facing the south, if that were possible, so as to get the full sun, when it happened to shine; the only window

being opposite this door. Daylight was not really important in the place, for usually the sleepers were ousted from their beds and sent forth to work before dawn and did not return until after the dark had come.

"The fireplace in the center was such as red Indians might have made. It was a pavement of stone and sand in a wooden box about eight feet square and a foot high, built on the floor of the shack. Over it was a funnel of slabs leading to a hole in the roof for the smoke, or part of it, to escape. Hooks and wires were arranged about it for the drying of wet clothes.

"About 60 men constituted the population of one camp. The pay was wretched, all things considered, and I was never done wondering that even the ablest "labor recruiter" could induce men to undergo such drudgery on such terms. Experienced and skilful woodsmen received \$40 a month; others \$30 to \$35. But the pay included board and lodging, and I think this was always held out as enticement of power. Adroit recruiters, busy in the slums of the cities, were wont to curl glib tongues about the advantages of a life where there was no boarding-house bill to be met. It is to be said that in general the fare was ample and fairly good. The great staple was baked beans, and the fireplace in the center was the home of the everlasting bean pot."

One wonders what has become of the army of 140,000 men who were engaged in the winter camps of the Lake States during those heroic days.

When the ice broke up in the spring, the decks of logs along the stream were driven to raft-assembling points like Beef Slough and Stillwater. Here each log was branded with its owner's mark and

sorted into booms. In the early days, rafts were made as follows:

"The logs were placed side by side and lengthwise of the stream. At each end of each log great holes were bored. A limb of birch was laid across, a binding withe of split burr-oak was bent over it as a staple, and pegs were driven into the holes to hold the staple fast; contrary to precept; square pegs into round holes. It was wasteful, extravagantly wasteful; there is no doubt of that. The holes spoiled the ends of the logs, and the birch and burr-oak were increasingly difficult to come by. But what cared we? The resources of the continent, bestowed upon us because of our great deserving—would they not last forever? On with the dance and the hole-boring!

"Each section of logs thus bolted together extended the length of the raft and was called a string. In making up the strings, which were units of the raft, care was had to put side by side logs of different lengths, where that was possible, that there should be few even breaks at the joints. This was necessary to keep the whole thing from tearing apart as it went around the bends. But at best the texture was uncertain, and when a forward corner of a raft hit the bank the birch lashings would crumple up and the logs start forth like sheep loosed from a pen.

"At each end of each string was a great sweep-oar made of a plank bolted to the butt of a young tree. A raft with ten oars at each end was a ten string raft. I have seen rafts of 15 strings, when they covered more than three acres and looked like a vast plowed field gone afloat.

"When the raft had been constructed after this fashion, the boom that had held the logs in Beef Slough or elsewhere was

opened and the raft slid out upon the river."

To make a lumber raft, the method was similar.

"The boards from the mill were 16 feet long and an inch thick. They were arranged side by side, one layer one way and the next criss-crossed on this until 24 courses had made an even-edged pile 16 feet wide and 32 feet long. This was called a crib and was the unit of the raft. It was now framed in the pieces of 2 by 8. Holes were bored in these and stakes called "grub-pins" were thrust through the holes to keep the frame together. The grub-pins projected above the cribs. To make a raft it was only necessary to fasten the cribs together with pieces of plank bored with holes to fit the grub-pins."

In those days, every town along the upper Mississippi had a sawmill as surely as it had a school house and churches. "It was," says Russell, "the happiest business ever known, for the logs slipped easily from those immemorial forests of noble white pine to the northward (believed to be inexhaustible and created for our sole benefit), and as for the lumber into which they were made—all men must have that."

"All day long the great rafts followed one another, floating with the current of the broad, placid, and beautiful river as the business mounted (crimes or no crimes) and scattered wealth and wages all up and down the stream side. Upon it battened these new-sprung towns, while a definite if primitive romance hung upon all its activities; the romance of easy money, adventure, and peril, the finer romance of battling with nature, subduing forests, and going face to face with the wild. Chiefest of its rougher

and almost Neanderthal glammers was around two battalions of its industrial army, those queer wild men I have described as fighting out the savage winters in the woods, and the other queer wild men that managed the rafts down the involutions of the Mississippi."

To George Winans belongs the credit of having perfected steamboat towing of rafts whereby he revolutionized the lumber industry. Among the earliest to profit by this new rafting experiment were Frederick Weyerhaeuser and Frederick Denckman—destined to become timber tycoons.

Development was rapid after this. Rafts ceased to be plaited with birch boughs and staples and were just masses of loose logs held with brails tightened by winches. Rafts increased mightily in size—600 feet in length and 250 in width was common. Russell records a raft that was nearly a third of a mile long. What it meant to navigate acres of logs through the tortuous channel of the Mississippi can be imagined.

Lumber rafts were slower to push than log rafts, because the water running between the logs offered less resistance. Yet phenomenal speed was made—in 1883 the Menominee took a lumber raft 192 feet wide and 576 feet long from Read's Landing to Alton in six days and four hours—a distance of 582 miles!

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This is not a great book, but it is a book that strikes straight to the heart of anyone who knew the halcyon days of lumbering in the white pine region. As for the riverman, who, on reading this book, will not echo the old-timer's cry: "The only ambition I have is to get back to the Mississippi!"

A. B. RECKNAGEL.



**Trends and Silvicultural Significance of Upland Forest Successions in Southern New England.** By Harold J. Lutz. Bulletin No. 22, Yale School of Forestry, 1928. *Pp.* 68; *illus.* 22; *diagrams* 5; *tables* 20.

The writer of this bulletin, a research fellow at the Yale School of Forestry, gives an interesting description of the "normal" succession of forest types on the upland soils of the Connecticut region. Three main stages or associations are distinguished in the gradual advance from open land to the climax forest:

1. The red cedar-gray birch association, commonly known as the "old-field type." The picture of the forest reclaiming abandoned fields and pastures should be readily recognized by anyone familiar with the region—first, the open land, with a low cover of grass, weeds, or shrubs; then a scattering of red cedar seedlings and shrubby clumps of gray birch and minor tree species; their growth into an open forest stand, often interspersed with grassy openings or with shrubs such as sumac and bayberry and the low-growing juniper; and finally a transition into,—

2. The hardwood association. This is the usual upland hardwood mixture, decidedly variable in composition from place to place, but frequently characterized by the presence or dominance of some of the oaks. An "inferior hardwood" and a "better hardwood" phase may be recognized. The former often predominates during the early stages of development, with such species as dogwood, hop hornbeam, blue beech, red maple, and chokecherry. These are succeeded by the better hardwoods, such as red, black, white, chestnut, and scarlet

oaks, shagbark hickory, white ash, yellow birch, sugar maple, and basswood. This stage may persist for a long time unless there are hemlock seed trees in the vicinity, in which case hemlock seedlings become established and the association is succeeded by,—

3. The hemlock-hardwood association. As the name indicates, this is a mixture of hemlock with the "better" hardwoods. At first a fairly large number of species may be present, but later many of these are crowded out and over limited areas the stand may even become pure hemlock. The author gives convincing evidence that this is the climatic climax of the region, capable of perpetuating itself indefinitely, although he does not show very clearly why it should not progress into a pure hemlock association if undisturbed. The importance of shade in hemlock reproduction is demonstrated at some length.

Each association is considered as to its general characteristics, taxonomic features, distribution, successional relations, and anthropic relations (disturbances by man), and several examples of each are described. The excellent photographs of many of the areas studied by the author almost tell the complete story in themselves. The trends of succession are also shown diagrammatically, and the structure of each association is shown quantitatively in a series of tables.

Fire, grazing, cuttings, or other disturbances generally induce a retrogressive succession, a change back toward a more primitive association. These changes are described specifically for each association.

In the second part of the bulletin the value of each association from the silvicultural point of view is appraised, and some of the more important conclusions

as to silvicultural policy and practice are given. The red cedar-gray birch association serves to establish woodland conditions and has considerable value as a nurse crop for the hardwoods which replace it. Its yield of timber products, however, is very low, both in quantity and quality. The hardwood association is capable of better timber production, but is exceeded in this respect by the hemlock-hardwoods mixture, which occupies the site more completely and is more desirable for several other reasons which are presented.

For the red cedar-gray birch association, cuttings only to remove dead or dying material are recommended, allowing the natural succession to take place. The conversion of hardwood stands to hemlock-hardwood is favored where natural hemlock seeding is taking place, as opposed to the alternatives of maintaining the hardwood or of converting artificially to white or red pine. In the hemlock-hardwood association either shelterwood or light group selection cuttings should result in starting hemlock reproduction, which must be well established before final cutting or severe opening of the stand.

The conclusions reached are strictly applicable only to southern New England, but the subject deserves careful consideration by foresters in the other eastern and north central states wherever similar types are found. Those untrained in ecology need not avoid the bulletin as possibly "too technical," as only a few ecological terms are used and these are clearly defined at the outset.

EDWIN L. MOWAT.

**The Clearfield State Forest Tree Nursery.** By William F. Dague, District Forester. Foreword by Joseph S. Illick, State Forester of Pennsylvania. *Bulletin 47, Commonwealth of Pennsylvania, Department of Forest and Waters.* Pp. 31; illus. 15. Harrisburg, Pa., 1928.

The Clearfield State Forest Tree Nursery, established in 1911, is the largest of the several nurseries operated by the Pennsylvania Department of Forests and Waters. It is now about 20 acres in size with an annual output of approximately eight million trees.

In this bulletin District Forester Dague, who has had charge of the Clearfield Nursery since its establishment, presents a wealth of detail regarding operations there. His discussion of the way in which forest tree seedlings and transplants are produced is comprehensive in its scope and so interestingly presented as to hold the attention both of the layman and the technical forester. Presumably its chief purpose is to arouse and sustain the interest of prospective tree planters, landowners, and friends of forestry. However, there is enough technical detail to make the publication of value to the forester interested in the production of forest planting stock.

The excellent pictures, 15 in number, carefully selected to show a variety of the nursery operations, add greatly to the value of the publication, particularly for the reader who is gaining his first impression of a forest tree nursery.

The reviewer believes that the details of nursery management, if the nursery is to be successful, must be gradually developed through trial and experimentation

especially to fit soil, climatic, and economic conditions characteristic of that one nursery. This plan evidently has been pursued by the management of the Clearfield Nursery with marked success. A variety of equipment specially adapted to local needs has been devised and perfected, all to the end of more efficient production of young trees. Space does not permit of comment on the numerous interesting details of nursery management described. Those who are interested should read the publication in its entirety.

While as already stated the details of nursery management must be local in character, one of the best means of developing proper local methods consists in a critical study of other nurseries. For this purpose a personal inspection is always preferable but a great deal can be learned about the Clearfield Nursery from reading Mr. Dague's bulletin. He is to be complimented both upon successful management of the nursery and on his clear and entertaining presentation of the story.

R. C. HAWLEY.



“Pour Comprendre l'Arbre et la Forêt” By P. Thioller. *Librairie Hachette. Paris, 1927.*

This well illustrated book of pocket size is suggestive of a happy method of extending a knowledge of forests and forestry. It is one of several books of the Tourists' Library (*Bibliothèque du Tourisme*) published under the direction of Marcel Monmarché. Some other volumes of the set in addition to this one on the trees and the forests of France are

appreciations of monuments of Paris, modern decorative art, French landscapes, and the sea.

The book devotes the first chapter to direct and indirect benefits of the forest, following this by a description of forest stands, information as to how they are managed, and notes on the chief species, native and introduced. The next four chapters cover in an interesting way the subjects of utilization of the forest, protection, dune fixation, and the problems of reboisement in the mountains. Forest statistics and taxation are briefly handled in a chapter.

By all odds the most interesting portion for reference by the tourist is Chapter X, which takes up the forests by respective “departements,” with a page by page series of little attractive views of forests, indented in the text. To cap it all the book closes with a little lexicon of silvicultural terms for the benefit of the layman.

The author takes it for granted that the reader is interested in the silvicultural practices of France and writes for the eye of the educated. Regional forestry books for our travelling public in the United States which contained such specific readable material as this French treatise instead of generalities would be a welcome addition to popular books of the kind that one may slip into the pocket and read at leisure moments.

By the use of small print 260 pages of interesting material are presented. There are 49 diagrams and figures and 171 illustrations from photographs. The bibliography covers poetry and prose of the forest as well as technical forestry works.

SAMUEL N. SPRING.



**Bescherming der Bosschen. (Forest Protection in Java.)** By E. J. van Jelen. *Tectona*, Aug., 1928. Pp. 580-582.

This article deals with forest protection in Java under two main headings: Protection against theft, and protection against fire.

In the United States the first factor as a cause of forest damage is of less importance, but in Java the Dutch have had continual trouble with the illegal cutting of timber by natives, who sometimes even go out in small armed bands. This condition is so serious that a police force of 1417 men is employed to protect the teak forest of about two million acres.

Forest fires have been and still are the most destructive of all causes of damage. Regulations for fire protection began as early as 1787. In the earlier methods the "blady" grass was either cut and burned under supervision or cut and covered with earth. Then the method of protection by means of fire lines gradually developed, until in 1905 the following method was adopted:

1. Burning isolation strips around the forest area and along the boundaries of the grass fields.

2. Construction of fire lines along the roads and trails dividing the forest into blocks.

3. Erection of lookout towers and placing of fire alarms for the purpose of giving signals.

4. Provision of adequate patrol by watchmen.

The authorities have lately come to the conclusion that most fires are set intentionally and that fire protection

methods must be centered more on direct preventive measures against the starting of incendiary fires than indirect methods of fighting the fires after they have started. The main importance of fire lines at present therefore is as a starting point for back fires in fighting a big fire.

During the fire season of 1926 an investigation was conducted regarding forest fires with special reference to the time at which they started. Records were obtained for 4300 fires, or about 60 per cent of all the fires that occurred. The hour was taken as the unit; fires between 12 M. and 1 P. M., for instance, were recorded as having started at 12 M. This investigation brought out that forest fires in Java started mostly during the time of day when there was the least danger of careless or accidental fires; while the fewest fires occurred when travelling and walking to and fro of the natives in the woods was the heaviest. The largest number of fires occurred at 12 noon and at 8 P. M. when there is practically nobody in the woods, the smallest number in the morning before 7 A. M. and in the afternoon between 4 P. M. to 7 P. M. when all the workers go to and from the fields and when the natives are driving out or bringing in their live stock.

This obviously points to the fact that fires for the most part are set intentionally and the offenders choose the time of the day when they are least likely to be caught. It further shows the advisability of more attention to direct measures for prevention of incendiary fires.

J. H. VAN WYK.

## NOTES

### VALUE OF TRAILS IN CONSTRUCTION OF LOW STANDARD ROADS

In the early days of national forest administration there was a rather definite idea that trails should be so located that roads could later be constructed over the same routes and advantage thus be taken of construction work done on the trails. During the last decade our general progress has been toward lower standards in trails and higher standards in roads, and in District 1 at least we have not in recent years considered that trails would be of much value when it came time to construct roads into the territory served by the trails.

Some study of existing trails during the past two years has convinced the writer that there are many miles of existing trails over which low standard roads should be constructed for protection and development purposes, and which will be a real asset in reducing costs of road construction.

The following extracts from a report by Road Foreman Edwin Nieland are interesting as bearing on this subject. The report is on 12.3 miles of road constructed by Nieland from the Bitterroot River drainage in Montana over the Montana-Idaho divide to the Selway River drainage in Idaho. About 13 miles of further construction is planned for next year which will extend the road to the Deep Creek Ranger Station, located at the confluence of Deep Creek and the Selway River. The cost of the 12.3 miles

constructed during the past season was \$11,676.86, or an average of \$949.33 per mile.

Nieland says, in part:

"The road is constructed 7 feet wide on side hill; no grading on flat sections; clearing limited to that absolutely necessary; no location survey, road follows old pack trail wherever possible; minimum radius of curves about 20 feet; maximum grade on long stretches, 12 per cent; on short sections, 20 per cent; bridges and culverts of log construction throughout. . . .

"In Miles 11 and 12, where the road is developed over the summit on a 12 per cent grade, the route is entirely away from the pack trail. This offered an opportunity to determine the saving in the cost of road construction along an existing trail on account of the constructed trail.

"The work on these two miles consisted of medium clearing with slopes from 30 per cent to 100 per cent, with the average at about 60 per cent.

"The cost of constructing a trail upon which the tractor could be operated came to an average of \$200 per mile. This does not include any extra clearing, which in the case of a pack trail would average 10 feet wide. The value of this figured at 1.2 acres per mile at \$150 per acre would bring the cost to about \$400 per mile. However, in the case of a pack trail it would be necessary to widen the trail at an estimated cost of from \$50 to

\$75 per mile, which would indicate that a pack trail under these conditions would represent a value of from \$300 to \$350 per mile, or from 18 per cent to 20 per cent of the cost of construction.

"On flat ground and on slopes up to 15 per cent, the value of the trail is small and would be almost entirely represented by the value of the clearing done on the trail.

"It is on slopes from 15 per cent to 40 per cent that I believe the trail represents the greatest proportionate value since in this case the slopes are moderate and the tractor can be operated on the trail without doing additional work; also, a comparatively small amount of grading is necessary on these slopes to obtain width and the graded trail represents a substantial proportion of this. I believe in this case the pack trail represents a value of from 30 per cent to 50 per cent of the cost.

"On slopes from 40 per cent to 60 per cent the value of the trail is less, due to the greater amount of yardage necessary to move and the extra work required before it can be used by the tractor. I would estimate that in this case the value of the trail would be from 20 per cent to 30 per cent of the construction cost.

"These latter conclusions are only estimates based upon the study made in Miles 11 and 12 and upon observations on the entire project during the season's work. It is hoped that, during the course of the work next season on this project, it will be possible to make further studies along this line."

It will be understood that the percentage of saving that Nieland estimates from the trail would not hold for a higher standard road, and that the standards set for this project were decidedly

low. After an inspection of the project it was agreed between those of us responsible for it that on this particular road it was a mistake to put in maximum grades of 20 per cent, since these could have been reduced to a maximum of 15 per cent or 15 per cent at a relatively small increased cost. It is in fact planned to make this change when the road is opened up in the spring, and to hold maximum grades to 15 per cent on the remainder of the project.

This road is, of course, not designed for public travel. It is a motor way into a big interior country and will make possible the transportation of men and supplies by slow-moving trucks in place of foot travel and pack train transportation. The Deep Creek Ranger Station is the distributing point for the Salmon Mountain division of the Nezperce Forest, an area of approximately one-half million acres. It is far from a good road, but we believe it will be much better than none.

FRED MORRELL.



#### CORRELATION OF TOTAL AND MERCHANTABLE HEIGHT IN WESTERN YELLOW PINE

During the field season of 1926 data were collected in connection with a timber survey in central Idaho on the total height and merchantable height to an 8-inch top diameter, by diameter classes for 898 western yellow pine trees. Heights were measured with an Abney hand level after the horizontal distance from the tree had been determined by pacing. Diameter breast high was secured by means of a diameter tape, and recorded to tenths of an inch.



The trees were assigned to site classes by means of the District 4 Site Table, which is based upon diameter and total height. Fifty-eight trees fell into site 1, 497 into site 2, and 343 into site 3. Within each site class the trees were then

comparison between the same diameter classes in the different sites and between different diameter classes in the same site.

It is evident from these figures that:

1. The difference between total and merchantable height varies according to

Diameter breast high, inches	Site 1			Site 2			Site 3		
	Total height	Merchant- able height	Differ- ence	Total height	Merchant- able height Feet	Differ- ence	Total height	Merchant- able height	Differ- ence
2.....	15	..	..	10	..	..	7	..	..
4.....	30	..	..	20	..	..	14	..	..
6.....	44	..	..	29	..	..	20	..	..
8.....	57	..	..	39	..	..	27	..	..
10.....	70	11	60	49	12	37	36	3	33
12.....	83	37	46	58	25	33	43	17	26
14.....	93	55	38	67	37	30	51	26	25
16.....	103	70	33	75	48	27	58	34	24
18.....	110	83	27	83	57	26	65	41	23
20.....	118	92	26	91	66	25	71	49	22
22.....	125	100	25	97	73	24	75	55	20
24.....	132	108	24	102	80	22	79	60	19
26.....	139	116	23	107	86	21	84	65	19
28.....	145	123	22	112	92	20	88	70	18
30.....	151	129	22	117	97	20	91	74	17
32.....	156	134	22	121	102	19	94	78	16
34.....	160	138	22	125	107	18	98	82	16
36.....	163	141	22	130	112	18	101	85	16
38.....	166	144	22	135	117	18	104	88	16
40.....	169	146	23	140	122	18	106	90	16
42.....	171	148	23	146	128	18	108	92	16
44.....	172	149	23	149	131	18	109	93	16
46.....	172	149	23	150	132	18	109	94	15
48.....	173	150	23	150	132	18	..	..	..
50.....	174	151	23	150	133	17	..	..	..
52.....	..	..	..	150	133	17	..	..	..
54.....	..	..	..	151	134	17	..	..	..
56.....	..	..	..	151	134	17	..	..	..
Average	124	95	27	104	82	22	71	52	20

averaged by diameter classes, the average tree determined and plotted, and curves drawn to smooth out the irregularities. The accompanying figures, taken from these curves, show the average total and merchantable height by diameter classes for the three sites, and make possible a

the site, and is greatest in site 1 and least in site 3.

2. The difference between total and the merchantable height varies inversely by diameter classes within the site, being greatest in the small diameter classes and decreasing as diameter increases.

WARREN H. BOLLES.

## CHLOROPHYLL IN TREE LEAVES

During the summer of 1928 the chlorophyll contents of the leaves of over twenty tree species growing in the vicinity of the Bartlett Tree Research Laboratory, North Stamford, Connecticut, were determined. These analyses

Further work has been done on the green pigment contents of fertilized and non-fertilized trees and on the leaves of trees affected with leaf scorch. These results will be published later.

The species from which the pigment analyses were made were determined

Date 1928	Species	Dry matter in leaves	Chlorophyll per 10 g. fresh leaves	Chlorophyll per 10 g. dry leaves
		Per cent	Mg.	Mg.
June 8.....	American Elm .....	.....	31.30	.....
11.....	White Oak .....	.....	34.80	.....
21.....	Sugar Maple .....	36.50	45.70	125.20
July 10.....	Gray Birch .....	36.20	26.10	72.09
10.....	Black Birch .....	43.10	27.00	62.64
10.....	Trembling Aspen .....	40.40	32.80	81.18
10.....	Large-toothed Aspen ..	41.20	37.75	91.62
11.....	Almond .....	34.60	26.15	75.57
11.....	Peach .....	34.75	16.75	48.20
12.....	Black Walnut .....	31.80	26.95	84.74
12.....	Filbert .....	39.30	44.35	112.84
12.....	Shagbark Hickory .....	40.70	27.20	66.83
12.....	White Ash .....	42.10	31.25	74.22
17.....	Red Pine .....	33.00	14.00	42.42
17.....	White Spruce .....	32.10	13.25	41.27
25.....	Pecan .....	41.20	48.85	118.59
25.....	Horse Chestnut .....	30.90	58.35	188.83
25.....	Flowering Dogwood ...	29.50	48.50	164.40
25.....	Red Maple .....	42.40	49.35	116.39
25.....	Tulip Poplar .....	25.00	28.50	114.00
25.....	Beech .....	42.60	50.20	117.83
25.....	Chestnut .....	37.30	49.60	132.97
Aug. 1.....	Hemlock (1927 leaves) ..	38.65	22.10	57.18
1.....	Hemlock (1928 leaves) ..	38.65	19.60	48.75
1.....	Pin Oak .....	40.20	23.75	59.07
8.....	Sycamore .....	32.85	29.67	90.32

were made in connection with a series of investigations planned to gain information on the growth vigor of individual trees. Since the major project will take time to complete it was thought advisable to report at this time, without attempting to draw any conclusions, the progress made on the chlorophyll studies.

largely by the trees growing in the vicinity of the laboratory. Great care was used in the selection of the individual trees from which leaves were taken. Trees typical of the species, 4 inches, or generally larger, in trunk diameter were selected. In all cases, the leaves for the determinations were mature in

size and typical in color for the tree as a whole. The leaves were plucked off with the petioles intact and taken immediately in a vasculum to the laboratory. The general procedure was to collect the leaves in mid-morning after the dew had evaporated.

At the laboratory the petioles of the leaves were cut off and samples of the leaf blades weighed for the dry weight and chlorophyll determinations. Willstätter's method as modified by Schertz<sup>1</sup> for extracting chlorophyll *a* and *b* from fresh leaves was employed. The standard developed by Guthrie<sup>2</sup> was used for estimating the chlorophyll extracts in a Dubosq colorimeter.

The results, arranged chronologically for convenience, are shown in the accompanying tabulation. The data in the last column are the most satisfactory on the chlorophyll contents because the variable factor—water content of the leaves—is eliminated.

CARL G. DEUBER.



#### INVITATION TO JOIN FORESTERS TO TOUR EUROPEAN FORESTS

A group of foresters, lumbermen, and forest school men is planning to make an intensive study of European type forests during April and May under the direction of that experienced guide, Dr. C. A. Schenck. The party will sail between April 10 and 15 and return June 9.

<sup>1</sup>Schertz, F. M. 1928. The quantitative determination of chlorophyll. *Plant Physiology* 3:323-344.

<sup>2</sup>Guthrie, J. D. 1928. A stable colorimetric standard for chlorophyll determinations. *Amer. Jour. Bot.* 15:86-87.

The itinerary will include afforestation of waste land in Holland; hardwood coppice under standards, selection hardwoods, turpentine and rosin production from planted maritime pine forests, and famous afforestation work in France; coppice and high forest hardwood and high forest conifers in command, state, and private forests of Switzerland; the famous Black Forest of Germany, the Spessart oaks, the pineries of the Rhine Valley, and the pine plains near Berlin. The trip will show successful forests developed from natural seeding and from planting by the various silvicultural methods of our text books. It will show forests owned by states, cities, and villages, as well as successful private forests. Many of Europe's best foresters will guide the party with full information and records to show the business side of forestry. Economy in utilization will also be demonstrated. Over 20 organized forests will be visited, giving a long look ahead that American foresters can secure in no other way.

If a group can be made up, a side trip will be made into Sweden and Finland.

The spring months are selected as winter logging is still in progress, and spring silvicultural work in full swing on the forests. And the party will be back for the summer field season at home.

Forest school men, lumbermen, state foresters, and forestry commission members, as well as others interested in technical forestry are invited to correspond. Some sightseeing will of course be woven in for those visiting Europe for the first time.

Expenses will be kept at a minimum (about \$580). Those interested should



communicate with the undersigned, who handles the details and party make up, at Pennsylvania State Forest School, Mont Alto, Pennsylvania. This is the sixth annual tour made up under this management with Dr. Schenck as guide and director.

E. A. ZIEGLER.



#### NEW NATIONAL FOREST DISTRICT IN LAKE STATES

A new national forest district, embracing the states of Minnesota, Wisconsin, and Michigan, was established on January 1, 1929. The new Lake States District, to be known as National Forest District No. 9, already contains ten national forest units with a total of nearly 1,200,000 acres of government land. Because of the acute need which exists in this region for the reclamation of large areas of land, adapted to timber production but at present denuded and unproductive, the National Forest Reservation Commission has approved a program contemplating eventual acquisition of an additional two and one-half million acres of land in the three states. The purchase program will involve the expenditure of

more than six million dollars of federal funds.

The Lake States were formerly included in the Rocky Mountain National Forest District with headquarters at Denver, Colorado. The proposed extension of publicly owned forest lands, and the possibilities for development of forest resources represented by the vast acreage of privately owned forest lands in this region, have made more direct supervision desirable.

Earl W. Tinker, who as assistant district forester at Denver, Colorado, has supervised the land exchange and acquisition work of the Forest Service in the Lake States for the past several years, has been appointed District Forester in charge of the new Lake States District with temporary headquarters at Madison, Wisconsin. He is a native of Michigan and a graduate of Michigan State College. Following a year of graduate work at the Yale Forest School, he was employed in forestry work by the Canadian Pacific Railway. In the United States Forest Service, he has served as supervisor of two national forests, as assistant chief of the office of forest management, and recently as assistant district forester in charge of the office of lands.

# SOCIETY AFFAIRS

## RESULTS OF THE ANNUAL ELECTION

The results of the annual election were as follows:

President . . . . . Paul G. Redington  
 Vice-President . . John F. Preston  
 Secretary . . . . . Raymond E. Marsh  
 Treasurer . . . . . William N. Sparhawk

Members of the Executive Council:  
 J. S. Holmes, William G. Howard.

The proposal to incorporate the Society was approved, as was also the revision of the constitution.

The tellers were Roy O. Pierce and L. H. Reineke.

WARD SHEPARD, *Secretary*.



## AN INVIGORATING ANNUAL MEETING

### GENERAL COMMENTS

The annual meeting held in New York City on December 28 and 29, 1928, will rank high among the forward looking and constructive meetings of the Society. Attended by about 175 foresters,<sup>1</sup> it was

<sup>1</sup> The attendance by states and provinces, as indicated by registration cards and banquet reservations, was as follows:

New York . . . . .	52
Connecticut . . . . .	20
Pennsylvania . . . . .	19
District of Columbia . . . . .	14
Massachusetts . . . . .	12
New Jersey . . . . .	7
Maine, Maryland, Michigan, each . . . . .	4
Quebec . . . . .	3
Indiana, Minnesota, Montana, North Carolina, Ontario, Oregon, Wisconsin, each . . . . .	2
Arkansas, California, Delaware, Idaho, Illinois, Louisiana, Mississippi, Missouri, New Hampshire, Rhode Island, Tennessee, Utah, Vermont, West Virginia, each . . . . .	1
Unknown . . . . .	7
Total . . . . .	174

given over to vigorous discussions of major problems of forestry and to some exceedingly important announcements and plans for the future of the Society and the profession.

President Butler in his challenging address, "Battle Fronts of Forestry," gave the keynote for much of the succeeding discussion in pointing out the need for a more general advance along the whole battle line of forestry. This address and many of the other formal papers will be published in this and succeeding issues of the Journal. The program and brief abstracts of the discussions of each paper follow this general report of the meeting.

Among the outstanding events of the meeting was the announcement by Major R. Y. Stuart, Chairman of the Committee on Education and Research Fellowships, of a gift of \$30,000 from the Carnegie Corporation to the Society to finance a survey of some important problems in forest education. The successful

outcome of this project is principally due to Dean Henry S. Graves, who originated the proposal, and to the Committee on Education. By formal vote, the Council and the Society accepted the gift with grateful acknowledgments to the Carnegie Corporation, and authorized the Committee on Education to enlarge its membership, to formulate a plan for conducting the survey, and to incur expenditures against the fund. Unquestionably, this grant is a red letter event in the history of the Society and of the profession.

Another important step taken in New York was the resolution requesting the President of the Society to appoint a committee to study the present forest situation and propose a more adequate program for its solution. This action was the outcome of a resolution adopted by the Washington Section as reported in the December Journal, reinforced by a very lively discussion of the forest problem the first half day of the annual meeting.

Another straw that shows which way the wind is blowing was the announcement of an anonymous gift of \$1500 to be used for a first prize of \$1000, a second prize of \$250, and the balance for incidental expenses, for the best plan for the solution of the forest problem. The complete details are announced in this issue of the Journal.

The much discussed problem of a permanent Forester-Secretary is apparently coming to a head at last. Following the

report of the Secretary, the meeting adopted a resolution requesting the Executive Council to formulate a plan for financing a permanent executive officer. With the proposed study of forest education about to be launched and with probable important developments in the forestry movement ahead, it was the feeling that now is the crucial time in the life of the Society to get fully organized to meet future responsibilities.

The formal sessions closed with a warm expression of recognition of the forward progress of the Society during the incumbency of President Butler.

After the serious part of the meeting was over, the Society assembled en masse at Keen's Chop House, where R. S. Kellogg and his energetic assistants had staged a memorable dinner and where, under the jovial and inviting direction of Sam Spring as toastmaster, many of the old timers delivered themselves of quaint reminiscences and friendly jokes on one another. Pinchot, Sherman, Redington, Butler, Hall, Recknagel, Woolsey, Kelleter, and others told their tales, and Shirley Allen, Herman Chapman, Ralph Hosmer, and Dick Fenska sang songs or recited poetry that smacked of the forest soil.

On Sunday, December 30, a small but enthusiastic group enjoyed an interesting field trip to the white cedar swamp and pine barrens of the Lebanon and Bass River State Forests in southern New Jersey.



FRIDAY MORNING SESSION, DECEMBER 28<sup>2</sup>

1. *Battle Frants of Forestry.* O. M. Butler, President, Society of American Foresters, Washington, D. C.

SUBJECT: INDUSTRIAL FORESTRY

WM. L. HALL, PRESIDING

2. *Report of the Society Committee on Industrial Forestry.* Shirley W. Allen, Chairman, University of Michigan, Ann Arbor, Mich.

3. *Some Obstacles to Profitable Industrial Forestry.* Franklin Reed, National Lumber Manufacturers Association, Washington, D. C.

4. *An Example of Industrial Forestry in the Adirondacks.* Howard L. Churchill, Finch, Pruyn and Co., Inc., Glen Falls, N. Y.

Following the presentation of these papers, Gifford Pinchot opened the discussion by emphasizing the responsibility of the forestry profession for solving the forest problem. He said that it is the business of the profession to insure provision of the supply timber which the country cannot get outside. We haven't a program that goes through. Reed makes the point, he said, that commercial forestry must be profitable and incidentally accepts the necessity of a timber famine. Churchill's interesting paper does not disguise the fact that on the whole there has been little progress in private forestry. Pinchot indicated that he is strong for commercial forestry, but not for reliance on the accident of profit or possible private initiative for a national forest policy. Assuming the necessity of forestry, the big thing is to reach a vigorous solution of the problem. If commercial forestry is possible on the basis of good will, the less the hardship involved if a comprehensive policy demands compulsion. Foresters must formulate their own plan on a plane that is as large as the problem. They must lay the basic facts and their plan before the people of the United States.

Barrington Moore made the point that the public interest in what happens to forest land must supersede the interest of the private owners. He expressed the belief that compulsory measures may be necessary to insure forest land being left in a productive state.

A. B. Recknagel referred to the excellent work done by the National Committee on Wood Utilization and its far-reaching results. He proposed that the Society adopt a resolution calling for a similar committee to devise better means of attacking the forest problem in a co-operative spirit.

Franklin Moon called attention to what he termed "the excessive modesty of foresters" in not assuming more aggressive leadership. He agreed that public welfare must take precedence over private profit, but raised the question as to how far private owners can be asked to forego present profits in the public interest. He suggested a continuing national board of forestry strategy to determine from time to time what steps should be taken. In his opinion modification or repeal of the Sherman Act is desirable, in order to permit, under suitable Government supervision, the restriction

<sup>2</sup> Reported by R. C. Hall.

of production and control of prices so that lumbering and forestry may be stabilized and saved from cutthroat competition.

J. W. Toumey made a vigorous plea that the public should recognize its responsibility to the forest owner. He referred to conditions in southern New Hampshire which were all favorable to forestry on privately owned lands, except for the exactions of the tax collector. He said that increased assessments on growing timber and the mounting annual taxes removed all possibility of profit either in holding second growth or in establishing plantations.

G. P. Ahern called attention to the insignificant accomplishment in forest growing in comparison with the national need, quoting statistics on this subject. He denounced the misleading propaganda of the lumbermen as to the extent to which forestry is actually practiced on private lands. He scored the foresters for not taking more aggressive leadership. When they want anything from Congress, they come with "the lumbermen leading them by the hand." The forest fire situation is most pathetic, said Ahern. Until the foresters get stirred up and present the facts to the public, it is impossible to get any public recognition of the urgency of the forest situation. "We hold the trumps—the other fellow has the gun."

P. W. Ayres mentioned the proposed forest tax legislation in New Hampshire as a step toward curing the conditions of which Toumey complained. He expressed his belief that on the whole public ownership and management of forest lands must be our chief reliance in solving the forest problem, citing European experience. He pointed out the importance of carrying out the policy of

federal acquisition of public lands, which although authorized, is at present blocked by inability to obtain adequate appropriations from Congress.

R. S. Hosmer suggested the desirability of considering means of bringing pressure to bear on Congress in order to secure adequate appropriations for the carrying out of authorized forestry programs.

R. Y. Stuart made the point that recognizing the existence of a forest problem, the important thing is the attitude of the foresters to that problem. He called attention to the summing up of the present situation in the recently issued annual report of the Forester, and expressed the opinion that there is no single answer. It is necessary for foresters to work on all phases. Speaking for the Forest Service, the coöperation of all agencies is welcomed, including that of "the John the Baptists crying in the wilderness." Stuart agreed that we must have a plan and that we need more "pep," but held that we must keep our feet on the ground. The foresters should get behind the movement to break down all the obstacles to continued production of timber on our forest lands.

Chairman William L. Hall stressed the need of fundamental education, not so much in forestry, as about the forests. There is still a great need for information and public understanding of the problem. Reforestation work in Arkansas would go on over greatly increased areas if the public would permit. Most of the people in Arkansas still think of forest lands in terms of future strawberry patches and cotton fields. The difficulty is with the people who do not sense the idea of forestry. Hall commended very strongly the campaign of education now being conducted by the American Forestry Association.

FRIDAY AFTERNOON SESSION, DECEMBER 28<sup>3</sup>

SUBJECT: FOREST PROTECTION

S. B. SHOW, PRESIDING

1. *The Future of Forest Pests. J. S. Boyce, Director, Northeastern Forest Experiment Station, Amherst, Mass.*

C. R. Tillotson, in commenting on Boyce's paper, reported a recent discussion in New England at which a nurseryman had damned the Federal Horticultural Board and its activities. He felt that this represents an unfortunate attitude on the part of some whose support of quarantine measures could normally be expected, and recommended that the Society go on record in its resolutions as commending and supporting the Federal Horticultural Board.

Henry Schmitz raised the question as to whether the interstate shipment of trees should be stopped. Boyce replied that he was not ready to condemn all interstate shipments, particularly within a given forest region. In his paper he intended to refer primarily to inter-regional

shipments, which he thought should be avoided.

L. H. Pennington emphasized the fact that history points to the probability of the continued introduction of foreign parasites. He believes that a hopeful solution of the problem lies in (1) investigation; (2) education, including information as to how to recognize and treat pests; (3) extension, so that the general public will be ready to assume responsibility for control measures; and (4) the possibility of selecting and breeding disease-resistant trees.

H. B. Peirson agreed with the remarks of the previous speakers and urged that full consideration be given to insects as well as to diseases in any program of plant pest control.

2. *Fire Protection Needs in the Inland Empire. Fred Morrell, District Forester, Missoula, Mont.*

J. S. Boyce emphasized the importance of accessibility in fire control activities and told how some 1200 to 1500 acres were saved in 1926 because men were on the ground and knew the country.

J. F. Preston recommended a sufficient investment in the way of roads, equipment, and personnel on some one National Forest, or possibly a group of Forests, to prove that effective fire control is a real possibility. He felt that a demonstration forest of this sort would be of great value and would be particularly helpful in securing from Congress

appropriations to do the same thing on the National Forests generally.

H. L. Churchill, commenting on Morrell's statement that if the improvement program which he suggested were put through there would then be one mile of road to every 5000 acres of land, called attention to the fact that in Württemberg, Germany, there is one mile of permanent improved road for each 62½ acres.

O. M. Butler emphasized the fact that the problem of fire control on private lands is being aggravated by the decreasing area in virgin timber. He raised the

<sup>3</sup> Reported by G. H. Collingwood.



question as to whether private owners will continue to protect their cut-over lands, and if not, how they will be taken care of. Obviously unprotected cut-over lands constitute a serious menace to adjacent timber whether publicly or privately owned.

Morrell replied that there are one to one and a half million acres of cut-over white pine land in Idaho which has since been burned over and constitutes a bad fire trap. Most of this is coming back naturally and does not need planting, but there will be a long period before merchantable timber can be taken off. Meanwhile, adequate protection by private owners is very doubtful. He believes the answer lies in public ownership, in which the federal government will probably have to play an important part.

R. C. Hawley remarked that he got the impression from the discussion that the primary need in fire control work is money, while he had previously supposed it was personnel. He also spoke approvingly of Preston's suggestion that it would be desirable to have a National Forest in which fire is so thoroughly controlled that it can be pointed to as an ideal.

Morrell replied that the probable rea-

son why this suggestion had never been put into practice is that the Forest Service has attempted to make the money available go as far as possible over the entire area in its charge. This has necessarily resulted in spending the funds available on the most urgent needs of the National Forests as a whole.

R. Y. Stuart remarked that the Forest Service in discussing the forest fire situation is prone to emphasize the exceptionally bad seasons, when blow-ups occur, rather than those which are average to good. He does not feel that this is a mistake since it is important to recognize the fact that disastrous fires do occur and to plan to handle them effectively. He believes that about 25 per cent of the failures in fire control work are due to the failure of the personnel to act when and how it should, 25 per cent to lack of adequate coöperation, 25 per cent to lack of equipment, and 25 per cent to the unusual, such as lightning fires.

G. P. Ahern recommended a demonstration forest such as that proposed, and referred to certain of his experiences in the Philippines in securing funds for fire control by methods which foresters seem to have difficulty in using in the United States.

### 3. *A Basis for Determining Proper Expenditures for Fire Protection.* Leonidas Coyle, State Fire Warden, Trenton, N. J.

C. R. Tillotson emphasized the importance of education in any fire control program, pointed out that most of the fires in the East are man caused, and urged education in terms of fire prevention in general. He felt that foresters alone cannot handle the job but that they must get the help of everyone interested in fire prevention. He would like to see some of the Clarke-McNary Law money

put into a general fire education campaign.

H. A. Reynolds told of the fire prevention experiment on Cape Cod conducted by the Massachusetts Forestry Association, the Massachusetts Department of Conservation, and the Forest Service, and read the report of the results which has recently been prepared for publication. During the three years of the in-

tensive prevention campaign, a smaller area has been burned and the total expenditure for prevention and suppres-

sion has been less than in the preceding years, although climatic conditions were apparently more unfavorable.

4. *Steam Generating Apparatus in Forest Areas as Related to Causes of Forest Fires.* A. C. Coonradt, Oregon State Agricultural College, Corvallis, Ore.

Arthur Koehler brought out the point that just at present it is apparently more important to persuade operators to keep their present spark arrester equipment working than to devise improved forms of spark arresters. This does not mean that improvements are not both possible and desirable, but merely that there seems to be little use in going farther in this direction until there is some certainty that any improvements will actually be used.

In the course of the discussion the author stated that the committee of the American Society of Mechanical Engineers which has been working on the problem would appreciate definite suggestions as to what it might advantageously do next. P. T. Wetter, speaking for the Society, offered its coöperation in the solution of problems of this sort and urged further contacts as a means of making coöperation between the two groups as effective as possible.

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SATURDAY MORNING SESSION, DECEMBER 29<sup>4</sup>

SUBJECT: EXTENSION OF PUBLIC FORESTS

W. G. HOWARD, PRESIDING

1. *Dovetailing State and Federal Acquisition Programs.* F. W. Besley, State Forester, Baltimore, Md.

C. P. Wilber agreed with Besley that the presence of the federal government stifles state activity in the same line, although the problem is not acute in New Jersey. If national need can be shown and the federal government is the only agency which can meet that need, no objection to federal acquisition would be offered. Does the policy of federal "intrusion" in forestry coincide with other activities such as public health, schools, etc.?

H. S. Graves pointed out that Besley has opened up the whole question of National Forest policy—has legislation in the past been on a sound basis? His arguments apply equally to National

Forests in the West as well as in the eastern states. Shall the federal government take any responsibility other than as "wet nurse" to the states? The federal government should enter states where an actual national interest exists, but not where the state can handle the situation, as in New York and Pennsylvania. The federal subsidy under the Clarke-McNary Law will not be continued if the states do not handle the funds effectively and some states will be entirely unable to carry on alone without this money, *e. g.*, the present situation in Idaho.

H. H. Chapman stated that Maryland, although pleading the adequacy of

<sup>4</sup> Reported by C. E. Behre.

state initiative, has made little progress in state forests. In the Lake States, where no state acquisition has been undertaken over the 20- to 30-year period that forestry departments have been organized, the Minnesota National Forest stands out as the one big example of forest management and is the chief incentive for state activity now. Each state presents a separate problem and usually there is room for both agencies.

R. Y. Stuart called attention to the fact that non-forested states look with concern on the forest policies of forested states. Maryland and New Jersey would be justified in their position if they were self-supporting in regard to forest products. The influence and power of the federal agency in the state should play no part in the problem. A policy to insure timber supply for all states can only be met by federal action.

J. F. Preston inquired what the federal government is accomplishing in

2. *Denuded versus Restocked Lands for Acquisition.* Philip W. Ayres, *Forester, Society for Protection of New Hampshire Forests, Boston, Mass.*; E. A. Sherman, *Associate Forester, Washington, D. C.*

E. W. Kelley pointed out that the federal objective in acquisition is more than growing trees. It is land management or soil conservation. We have no basis for contradicting the wisdom of expenditures for this purpose. The federal policy is best suited to acquiring lands in need of rehabilitation.

T. S. Woolsey, Jr., stated that on the Battell Forest in Vermont the amount of lumber to be cut in 10 years is set up. If capital is reduced by this program, the excess above annual growth goes into the purchase of new land, which is limited to blocks having timber enough to pay off the purchase price. In Connecticut the forestry association buys lands worth

Pennsylvania. The difference in timber produced with or without federal program would be negligible there. Why should the federal government take producing lands, *e. g.*, in Vermont, when other areas really need federal acquisition?

Gifford Pinchot gave as reasons for the passage of a federal enabling act in Pennsylvania—(1) that Pennsylvania needed an example of decent forestry (2) that Pennsylvania needs all available land put in permanent forest production because it is so dependent upon imported timber. The National Forest in Pennsylvania has not retarded the state policy. Forestry in the United States cannot be considered in separate state units.

A. F. Hawes expressed the belief that room exists for both federal and state ownership. Vermont needs federal assistance because the state is incapable financially of handling the entire problem.

more than the state can pay and turns them over to the state for management, *e. g.*, the People's Forest.

Ayres overemphasized the financial returns from the Waterville area. Some income here really is reduction of timber capital and this is often the case elsewhere. The Forest Service has erred in trying to get too much income in the White Mountains of New Hampshire. Cutting should be more conservative for recreational purposes there.

Harris Reynolds said that in Massachusetts nothing prohibits special bills for buying lands in excess of the \$5 per acre limit under the general authorization. The purposes of state acquisition are not



financial but mainly to make idle acres produce. This object is best served by taking on denuded areas to be restocked. In regard to acquisition in general, the states can and should take on the job and get 100 per cent return from the lands instead of 25 per cent under federal ownership.

G. P. Ahern urged that foresters get out of their 10-cent purchase ideas and

3. *Bond Issues for State Forests.* A. S. Hopkins, Assistant Supt. Lands and Forests, Conservation Department, Albany, N. Y.

B. A. Chandler said that the bond issue idea is sound when the property will produce income or increase in value. Protection forests give return indirectly. Bond issues present easier means of raising money than annual appropriations, because people feel that the burden is

think in terms commensurate with the problem. One hundred million acres or more need public acquisition. State action seems hopeless in view of the increase in state expenses and debts and the character of state officials to be dealt with. A definite figure of 100,000,000 acres for acquisition should be kept before Congress.

being placed on those who reap the benefit, which is not the case.

P. L. Buttrick inquired whether New York had the power of eminent domain, to which Howard replied in the affirmative but said that it was seldom exercised because the price awarded the owner was always very high.

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SATURDAY AFTERNOON SESSION, DECEMBER 29

SUBJECT: SOCIETY AFFAIRS

O. M. BUTLER, PRESIDING

This session was devoted largely to announcements, reports, and plans for future activity by the Society, many of which have already been commented on in the first part of this report. R. D. Forbes suggested that at its next annual meeting the Society try the experiment of devoting one of the half day sessions to group meetings of those particularly interested in certain branches of the profession, such as silviculture, forest entomology, wood technology, etc. This would be in line with the provision of the new constitution authorizing subject matter divisions, and would afford opportunity for the presentation and discussion of many technical papers which

are of real value but for which time is not now available in the general sessions.

The following resolutions were adopted. Most of these were drafted by a Resolutions Committee consisting of Barrington Moore, Chairman, T. T. Munger, Wm. L. Hall, W. G. Howard, G. P. Ahern, S. B. Show, S. T. Dana:

WHEREAS, The forest resources of the United States continue to diminish at an alarming rate, chiefly through destructive cutting without regard to replacement and fires, thus depriving the people of an essential material and local communities of taxable values;

WHEREAS, The responsibility for the existence of the situation and for the

adoption of remedial measures rests squarely upon both the general public and the forest land owners; and

WHEREAS, The interests of the owners and of the general public are not necessarily in conflict, and it is generally possible for the lands to be so managed as to safeguard the public interest in them and yet yield reasonable profit to the owners;

*Therefore, be it Resolved,* That the President of the Society of American Foresters be and hereby is requested to appoint a committee to consider the problems presented in maintaining the productivity of the forest lands of the United States, and to devise and recommend for consideration and action by the Society policies adequate to meet these problems.

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WHEREAS, The Congress of the United States, in the Act of May 15, 1928, by directing "that the President shall proceed to ascertain through the Secretary of Agriculture and such other agencies as he may deem proper, the extent to and the manner in which the floods in the Mississippi Valley may be controlled by proper forestry practice," has recognized the advisability of including protection of watersheds by forest cover in the plans for the control of floods in the Mississippi Valley;

WHEREAS, The relation of forests to run-off is one of the important factors entering into intelligent and adequate plans for flood control;

WHEREAS, The Mississippi River Commission, which deals with floods on that waterway, is required by law to consist of seven members, three from the U. S. Engineer Corps, one from the Coast and Geodetic Survey, and three

from civil life, two of whom must be civil engineers; and

WHEREAS, The special report of said Mississippi River Commission on revision of plans for improvement of navigation and flood control dated November 28, 1927, indicates that the Commission as now constituted lacks the service and counsel of some one qualified by professional training to deal with the question of the relation of forests to floods;

*Be it Resolved,* That the President of the Society of American Foresters be empowered and requested to name a committee of three members to take such steps as seem best to bring to the attention of the President of the United States the importance of having a properly qualified forester on the Mississippi River Commission.

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WHEREAS, Congress has passed certain measures in recent years looking toward a national forest policy, especially in the passage of the Clarke-McNary Law, the McSweeney-McNary Law, and the McNary-Woodruff Law; and

WHEREAS, The Administration has failed to recommend to Congress adequate funds with which to put these policies into effect;

*Therefore, be it Resolved,* That the Society of American Foresters stands squarely behind this national program as exemplified in these bills.

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WHEREAS, Fire control on the National Forests has not yet reached the level necessary to insure the safety of both public and private timber growing enterprise; and

WHEREAS, The rate of appropriations by Congress and hence the existing rate

of progress in the development of road, trail, and forest improvement systems is inadequate;

*Therefore*, The Society of American Foresters urges the need for more rapid progress, and instructs its officers to do all in their power to speed up the program through action by Congress.

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WHEREAS, The gipsy moth is a serious forest pest which threatens serious damage to the forests of the entire United States;

WHEREAS, The so-called Barrier Zone has thus far checked the westward spread of this destructive insect; and

WHEREAS, The difficulty of holding the Barrier Zone is greatly increased by infestations of gipsy moth which are building up in the territory east of it; now, therefore,

*Be it Resolved*, That the Society of American Foresters urges upon Congress adequate appropriations to enable the U. S. Department of Agriculture to do necessary work in controlling the gipsy moth east of the Barrier Zone.

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WHEREAS, Forest trees have suffered tremendous and irreparable damage from introduced insect and fungous parasites; and

WHEREAS, The Plant Quarantine and Control Administration of the U. S. Department of Agriculture is making consistent efforts to exclude such parasites from the United States;

*Be it Resolved*, That the Society of American Foresters strongly endorses the principles underlying the work of this public body and the regulatory actions which in its judgment are essential, and just as strongly condemns any efforts to evade such regulations.

WHEREAS, The forest welfare of the country, both East and West, is intimately related to the rate at which the virgin timber supplies are exploited;

WHEREAS, Cutting in some regions is now proceeding at a pace that means early exhaustion of the virgin growth, and that is too rapid for industrial welfare and for economical utilization of the raw supply; and

WHEREAS, In some regions the sale and cutting of publicly owned stumpage is a factor in aggravating this condition, and there is in some quarters demand for still more rapid cutting of public timber; be it therefore

*Resolved*, That the Society of American Foresters hereby calls this situation to the attention of the federal agencies managing public forests, and of the individual states concerned, that they may take cognizance of the matter in formulating their timber disposal policies.

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WHEREAS, Tracts of virgin forest kept in undisturbed condition are essential for an understanding of forest requirements and the development of sound methods of cutting;

*Therefore, be it Resolved*, That the Forest Service and other agencies holding public forests be urged to preserve in their virgin condition sample areas of the more important original forest types.

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*Resolved*, That the annual meeting of the Society of American Foresters, assembled in New York City, commends the efforts of the organizations and individuals in Arkansas who seek to establish a State Forestry Department in that state; extends its compliments to the Governor and legislators in that State;



and offers any assistance that it can render in the formulation of suitable measures.

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*Resolved*, That it is the sense of this Society that publicly paid foresters in the course of their services as counselors and advisers of timberland owners and demonstrators of forestry principles should use their influence to encourage the employment of private foresters, wherever in their best judgment such a forester should be employed.

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*Resolved*, That the Society of American Foresters believes that further investigation of spark arrester problems is needed and recommends that the work be continued by the Main Research Committee of the American Society of Mechanical Engineers; also that research having as its object the improvement of efficiency of combustion as well as of spark arrester design be conducted in accordance with a coordinated plan and under competent direction at one or more universities having suitable equipment or situated where such equipment is readily available.

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*Resolved*, That the annual meeting of the Society of American Foresters desires to record its deep appreciation of the grant of the Carnegie Corporation for a constructive study of forestry education in America and to express its approval of the action of the Executive Council in formulating tentative plans for the study.

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*Resolved*, That the annual meeting of the Society of American Foresters desires to express its keen appreciation of the

gift of a prize fund for the best article proposing a solution of our forest problem, and to record its approval of the acceptance of the gift by the Executive Council.

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*Resolved*, That the Council be requested to consider at as early a date as possible a plan for employing a paid forester-secretary. It is recommended that the Council consider the use not only of available funds but of contributions within and without the Society.

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WHEREAS, Illness has prevented the presence of Sam Detwiler at the twenty-eighth annual meeting of the Society of American Foresters in New York City; and

WHEREAS, His friends and colleagues have missed the inspiration of his enthusiasm, loyalty, and helpfulness;

*Be it Resolved*, That the Society of American Foresters extends to him its best wishes and hopes for a speedy recovery.\*

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WHEREAS, The twenty-eighth annual meeting of the Society of American Foresters, now ending, has been profitable and inspiring to the members attending; and

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\* In response to this resolution, which the secretary transmitted to him by telegraph, Mr. Detwiler wrote: "I am deeply touched by this unexpected message and by this evidence that my associates regard me so kindly. It brings me good cheer and inspiration for the New Year. I am glad to tell you I am feeling better, and am enjoying field work in this warm dry climate (of Arizona). Were it not for the very changeable and humid weather of Washington, I would return home now, but I think it wise to stay out in the West till springtime."

WHEREAS, This success is due largely to the able work of the members in charge of the program and arrangements; be it

*Resolved*, That the members in attendance express their deep appreciation of the work of these committees and individuals.

WARD SHEPARD,  
*Secretary.*



#### PRIZE FOR BEST SOLUTION OF COUNTRY'S FORESTRY PROBLEM

A friend of forestry, who wishes to remain anonymous, has given the Society of American Foresters (headquarters, Lenox Building, Washington, D. C.) \$1,250 to be awarded as prizes of \$1,000 and \$250 for the best essays describing the present forestry situation in the United States and proposing a nationwide remedy for its solution. The purpose of the donor is to stimulate the study of the national problem of forestry and to bring out constructive suggestions for meeting it in an effective way.

#### CONDITIONS

I. Essays submitted in the contest shall cover: *First*, the actual forestry situation in the United States today; *second*, a nation-wide remedy which (a) will, if applied, solve the problem of a permanent and sufficient supply of forest products and secure other benefits of forests essential to the public welfare; (b) will be applicable in actual practice; and (c) can be applied in time to meet the nation's needs. The essays must be based not on hypothetical assumptions but on the actual situation in the United States today.

2. The essays must be typed and must not exceed 3,000 words, exclusive of a summary of conclusions which should be presented at the beginning of the paper.

3. The contest is open to any individual who desires to compete.

4. Essays should not be signed by the author's real name but by a pseudonym. This pseudonym must be placed on the outside of an envelope containing the author's real name and address, and transmitted with the essay.

5. The winning essays shall be published in the JOURNAL OF FORESTRY. The Committee of Award shall have the right to select from the other essays those which it deems worthy of publication, and they too will be published in the JOURNAL OF FORESTRY. The remainder of the essays will be returned to the authors if they request their return and provide postage.

6. The Committee of Award reserves the right to withhold the prize providing no essays which are in its judgment worthy of the award are received.

7. All essays submitted in the contest should be forwarded to either of the two members of the Committee of Award, namely, S. T. Dana, School of Forestry and Conservation, University of Michigan, Ann Arbor, Michigan, and Raphael Zon, Lake States Forest Experiment Station, University Farm, St. Paul, Minnesota, in time to reach them not later than September 30, 1929. The awards will be announced at the annual meeting of the Society of American Foresters in December, 1929.

P. G. REDINGTON,  
*President.*

## ANNUAL REPORT OF THE SECRETARY

(Presented at Annual Meeting)

During the past year the major energies of your officers and employees have been devoted to straightening out and organizing the routine affairs of the Society. In order to carry out the will of the members in increasing the dues, it seemed to the Council essential to obtain the services of skilled office personnel and build a sound organization from the ground up. We were fortunate in obtaining the services of Mrs. Audrey Hix who had had extensive experience in office organization, membership campaigns, and editorial and advertising work.

In the eight months Mrs. Hix has been employed by us, very marked progress has been made in organizing the work. First, we rented adequate office space, and purchased necessary though modest furniture and equipment. I will briefly mention the chief activities of the past few months. In all these activities of reorganization, Mr. Chandler has been especially helpful and most generous of his personal time and interest.

The first task was to clean up an accumulation of correspondence and complaints that could not be handled under the previous arrangement of part time help.

Hitherto a duplicate membership list was kept by the publishers of the JOURNAL. This system was costly and inaccurate. We now have only one list, which is kept in the main office, where we address the wrappers of the JOURNAL and send them to the printer.

We have made a complete inventory of our stock of JOURNALS and have

adopted an accurate system of stock-keeping. There is an increasing demand for back issues of the JOURNAL, the income from this source during the past year having been \$220.

A complete accounting system is maintained, the details of which are handled by the business office.

Membership applications are now sent simultaneously to all members of the Council. This should speed up election by several months compared with the old system of rotating applications from one Council member to the next.

The business management of the JOURNAL has been taken over by the business office, thus relieving the editorial job of some of the burdens which Zon endured so many years. This work includes the many details of seeing the magazine through the press, dealing with the printer, checking proofs, correspondence about advertising, advertising accounts, etc.

The collection of dues, involving the sending out of bills and letters, is handled in this office. To date all the 1928 dues have been collected with the exception of 19 Senior Members and approximately 40 Members. There are also 45 Senior Members and 11 Members with dues unpaid for 1927.

A large amount of time has been spent in installing an up-to-date and efficient system of files, records of membership, etc.

In addition to assisting on the above and other lines of work, I personally gave a great deal of time and attention to working out the new make-up, style, and paper of the JOURNAL, and to the details of the new contract for printing.

It was also my privilege, as a member of the Committee on Education, to have



a part in formulating the proposals for the creation of research fellowships and for the educational survey, and to assist in some of the many details of bringing these projects to their present stage.

I believe the basic work of the Society is now well organized and will permit the incoming officers to devote a larger proportion of their time to important projects and less to routine. During the coming year, for example, the educational survey is bound to make heavy demands on the time of our officers. If we want the Society to continue as a going institution, the present permanent personnel is the minimum organization with which we can function. In my opinion, the results of the past year justify the increased dues, and we have moved measurably nearer the goal of having a well-functioning organization.

From my experience this year, I can testify that the office of secretary entails a heavy burden on the incumbent. This is true also of the other offices, but I am speaking now from my personal experience of the secretaryship. In fact, I feel that the time is rapidly approaching when it will be asking a good deal of any busy man to undertake this job as a volunteer job superimposed on his regular work. Moreover, from the standpoint of the success and prestige of the Society, it is essential that we give serious consideration to the employment of a paid forester-secretary.

We cannot meet our responsibilities or our opportunities on the present basis. Unless all signs fail, we are on the verge of large new developments in the forestry movement. In a sense we are at the end of one epoch of forestry and at the beginning of another. It would be a tragedy if our Society should find itself un-

able to take an active and important part in this coming renaissance of forestry.

I shall outline very briefly a few of the many activities the Society could well engage in through a paid secretary. First, consider the internal development of the profession. The educational survey and the research fellowship are good examples of projects that will greatly strengthen the profession. They will lead to many new developments in professional training and placement in which the Society can be useful. The compensation of foresters in public and private employment is worthy of attention, and there should be closer contact with the employers of foresters. An employment service will be more and more needed. The membership ought to be largely increased and close contact kept with the Sections and individual members.

Externally, there is an enormous and largely undeveloped opportunity for leadership in the forestry movement. The great need of forestry is for programs of action. Our Society should have a larger part in creating them and putting them into effect. That means a large amount of analysis, of coordination, of contact with innumerable agencies from trade associations to appropriation committees, for the country as a whole and for individual states.

Can we finance the cost? Mr. Chandler has computed the cost for salary, additional clerical help, travel, etc., at \$10,000 a year. We now have a surplus, not counting the permanent reserve, of about \$9000. During the coming year this will increase to about \$12,000. I should like to propose that we take such of this \$12,000 as can safely be spared, raise additional funds by voluntary subscription within the Society, then seek

an equal contribution from outside sources. In such wise we could carry a paid Secretary for about three years. In that time, the right man could get the plan on a permanent basis by increasing the membership and by justifying the plan to the point where our membership would gladly pay the cost.

Any contributions would have to be entirely free of strings and should be sought from sources that would be above suspicion of interference or dictation and that would be generally approved by the membership.

If this plan finds favor in the eyes of this conference, I urge that the Council be now empowered to work out at an early date a definite plan for financing a permanent forester-secretary.

WARD SHEPARD,  
*Secretary.*



#### REPORT OF THE TREASURER

Real advance has been made in the conduct of the finances and business activities of the Society during the eleven months ending November 30, 1928. Before discussing these matters, however, your Treasurer desires to call attention to the debt of appreciation the membership of the Society owes to the former Treasurer, S. B. Detwiler, who held this office during the two years just prior to the establishing of our present executive office. Only those who were intimately connected with the work of the Society in those years know the tremendous amount of work and worry resulting from trying to carry on the work under conditions as they then existed. I realize very keenly what Mr. Detwiler went through in these years for I was intimately associated with him

in the establishment of a simple but modern accounting system; reorganization of an addressograph system; and the opening of our present offices. The progress which has been made this year would not have been possible if these fundamental changes had not been brought about during the prior period.

One of the advance steps made this year has been the appointment of a Finance Committee. During the early part of the year this committee reinvested nearly all of the surplus funds of the Society. Attention is especially called to the policy in regard to the Permanent Fund. It was doubtless a wise policy to establish this fund and it should be continued. The committee felt, however, that since the Society is in that stage of its development when expansion is continually necessary, funds should not be unnecessarily tied up where they could not be used by the Council.

The following is a statement of the financial policy which has been in the minds of the Finance Committee and is reflected by the detailed recommendations which they made in carrying out their work:

1. The Permanent Fund should not be represented by any specific securities or shown on the asset side of the balance sheet separate from other invested funds, but the amount of said Fund should be represented by a reserve out of surplus. During the present period of expanding activities this reserve should be increased only by contributions which are made specifically to that fund by members and other contributors.

2. Another reserve should be set up to represent the interest earned by the Permanent Fund. This should be increased each year by the amount of

interest computed on the total of the Permanent Fund at the average rate earned by all invested funds during the year. The funds represented by this reserve should not be spent except by a special vote of the Council.

3. Only such monies as are needed as working capital should be left on the checking account. All other monies should be invested as follows:

a. An amount approximately equivalent to the reserve for the Permanent Fund, in long term securities where yield and security are the primary considerations rather than marketability.

b. Monies which will be needed during the current year, in Government and Federal Land Bank bonds.

c. The balance of such monies, in high grade bonds rating BAA or better, which are reasonably marketable and netting as high a rate of interest as is consistent with these requirements.

Among other innovations which have been made and which it is believed should be continued may be mentioned: the establishment of a voucher check system; the bonding of our Treasurer and office force; and having the books audited by a public accountant. Many other im-

## EXTRACTS FROM REPORT OF AUDITOR

BALANCE SHEET NOVEMBER 30, 1928

Assets		Liabilities and Net Worth	
Cash in Bank.....	\$1,835.70	Accounts Payable .....	\$1,110.08
Petty Cash Imprest Fund.....	22.50	Dues paid in advance.....	114.00
Invested Funds per detail Schedule 1 .....	11,932.00	Subscriptions paid in advance....	13.65
Accounts Receivable .....	181.99	Zon Testimonial Fund.....	316.15
JOURNALS in Stock.....	5,255.64	Reserve for Permanent Fund....	2,990.00
Office Equipment .....	\$806.45	Reserve for Permanent Fund Interest .....	429.03
Less Depreciation Reserve 86.82		Surplus .....	\$10,644.28
	719.63	From 1928 Earnings....	4,664.59
Office Supplies .....	174.67		15,308.87
Interest Accrued .....	159.65		
		Total Liabilities and Net Worth .....	\$20,281.78
Total Assets .....	\$20,281.78		

## SECURITIES IN INVESTED FUND (SCHEDULE 1)

	Par value	Cost
1—U. S. Gold Bond 4½s Registered.....	\$500.00	\$500.00
5—U. S. Treasury 4½s Gold Bonds \$100 each.....	500.00	500.00
1—So. Pacific Bond 4½s Gold (1968).....	1,000.00	1,003.75
1—Commonwealth of Australia Bond—30 yr. 5s.....	1,000.00	984.50
1—International Match Corporation, 25 yr. 5s S. F.....	1,000.00	1,007.50
1—So. California Edison Ref. Gold 5s (1951).....	1,000.00	1,045.00
1—Mo. Pacific 1st Ref. 5s Gold (1977).....	1,000.00	1,013.75
1—Erie R. R. Ref. & Imp. 5% Gold (1967).....	1,000.00	982.50
2—Federal Farm Loan Bonds 4%.....	2,000.00	2,055.00
1—Certificate of Deposit Munsey Trust Co. dated April 11, 1928, int. 4% .....	1,000.00	1,000.00
1—Wheeling Steel Corp'n. Bond 4½s (1953).....	1,000.00	895.00
1—Kingdom of Norway 5% Bond (1963).....	1,000.00	945.00
Total Cost .....		\$11,932.00



STATEMENT OF INCOME AND PROFIT AND LOSS FOR THE ELEVEN MONTH PERIOD ENDING  
NOVEMBER 30, 1928

Membership Dues, 1927.....	\$330.00
Membership Dues, 1928.....	8,958.43
JOURNAL Subscriptions, prior to 1928.....	67.50
JOURNAL Subscriptions, 1928.....	2,964.61
Sales of JOURNALS.....	220.29
Advertising .....	331.86
Interest earned .....	428.84
Current Fund Contributions.....	102.00
1928 JOURNALS on hand priced at cost.....	101.08

Gross Income ..... \$13,504.61

*Expense deductions*

JOURNAL Expense .....	\$3,956.31
Miscellaneous Printing .....	225.83
Stationery and Postage.....	553.99
General Expense .....	594.68
Salaries .....	2,844.27
Office Rent .....	300.00
Addressograph Expense .....	67.90
Commission and Exchange.....	12.72
Legislative Expense .....	93.74
Travel Expense .....	10.65
Contributions to other Societies.....	50.00
	8,710.09

Net Profit from Operations..... \$4,794.52

*Allocation of Net Profit*

Reserve for Permanent Fund Interest.....	\$129.93
To increase same by the amount which the balance in the Reserve for Permanent Fund \$2,668.00, would earn at the average rate of 4.87 for a full year.	
Balance, transferred to Surplus.....	4,664.59
	\$4,794.52

WASHINGTON, D. C., December 20, 1928.

I have made an audit of the books and accounts of the Society of American Foresters for the eleven month period ended November 30, 1928, and after the several adjustments shown in Schedule "B" are made in the Journal and posted to the proper ledger accounts, the foregoing Balance Sheet and Income Statement will, in my opinion, correctly set forth the financial condition and result of operations for the eleven month period ended November 30, 1928.

(Signed) FRANK A. LINZEL,  
Certified Public Accountant (N. Y.).

provements in the conduct of the routine business, buying of supplies, and keeping of records have been made by Mrs. Hix, our Business Manager. These changes in methods combined with the executive ability of Mrs. Hix are making it pos-

sible for your officers to leave much of the routine work for her uninstructed attention and have saved money. Our organization and system of handling the business of the Society is still far from perfect, but when I look back to the

winter of 1925 when I first acted as auditor of the accounts of the Society, the progress is such that the Society may well take a large degree of satisfaction. Our house is now in order and we should have the confidence, courage, and faith to undertake some really constructive projects.

The accompanying extracts from the report of Frank A. Linzel, Certified Public Accountant (N. Y.), reflect the status of our accounts and finances. In reading these statements it should be kept clearly in mind that they cover only an eleven months period because we have changed the close of our fiscal year to November 30, in order that our final financial statement may be presented at the annual meeting of the Society. The eleven months included are those in which most of our income is received but the month excluded, December, is one of exceptionally heavy expense. Allowance should be made for this fact in reading the above extracts and following comments from the auditor's report:

COMMENTS ON THE AUDIT FOR THE PERIOD  
ENDED NOVEMBER 30, 1928

*Cash in Bank.* The Washington Loan & Trust Company has sent me direct a copy of the Bank Statement for your Society for the month of November, 1928. The balance of cash shown thereon has been reconciled and proves the cash shown on Balance Sheet.

*Petty Cash Imprest Fund.* The Petty Cash has been counted which, together with receipts for expenses paid, accounts for the \$22.50 in the Fund.

*Invested Funds.* This account, upon analysis, was found to include interest accrued at the time of the purchase of the various bonds to the extent of \$120.43, also an erroneous charge of \$14.47. The account has been adjusted to reflect true cost of the Securities. Schedule A. 2 lists the securities which were presented for my inspection by your Treasurer.

*Journals in Stock.* I was informed that the value of 939 JOURNALS of the 1927 issue was not included in this account. Your Treasurer has placed a value of 35 cents each thereon, totaling \$328.61, by which this account was increased and Surplus correspondingly. Also, that there were on hand 361 issues for 1928, which were valued at 28 cents each. The account was therefore increased \$101.08, which was taken into profit for the period. An adjustment was also made for JOURNALS sold during the year, which leaves the account reflecting an average value of 36 cents cash for the 14,599 Journals reported to be on hand at November 30, 1928.

*Reserve for Permanent Fund.* Contributions during the period in the amount of \$322.00 were transferred to this Fund.

*Reserve for Permanent Fund Interest.* To this account there was transferred \$129.93, representing the interest which the Reserve would earn at the average rate of 4.87% for a full year.

*Net Earnings for the Eleven Months.* It should be noted that expenses for but eleven months have been taken up, due to closing accounts at November 30, 1928, consequently the earnings are overstated to the extent of the expenses for one month offset by any income. Further, the increased dues account for a part of the increase.

*Accounts and Records.* During the period under review, several improvements in book-keeping methods were instituted and the accounts and records, which are carefully kept, are consequently in very good condition.

B. A. CHANDLER,  
Treasurer.



REPORT OF MEMBER OF EXECUTIVE  
COUNCIL IN CHARGE OF ADMISSIONS

In October, upon the death of Mr. J. Girvin Peters, I was appointed by our President, Mr. Butler, as the Member of the Executive Council in Charge of Admissions.

Mr. Peters, as you know, was Member in Charge of Admissions for a great

many years. He gave an endless amount of time to this work, and considering the organization he had to work with he did a splendid piece of work. The handling of nomination papers and membership procedure is a very detailed job and is a big enough one to require the constant attention of one person. Despite this fact and the handicap under which Mr. Peters worked of not having a Society office, he accomplished much.

Now with our business office established, we are in a position to turn our attention to the working out of a system, which we all know is badly needed, that will expedite election. A tentative program was prepared and a memorandum sent to the Section Secretaries in late October. In this memorandum the following procedure was outlined:

The Member of the Executive Council in Charge of Admissions will, of course, be responsible as heretofore, but the routine will be centralized in the Society's office at Washington. All nomination papers will be sent to the Washington office where they will be checked for sufficient information, vote of Section, address, date, etc. If necessary, a letter will be sent to the Section Chairman of the Membership Committee requesting further information.

The nominees are then listed for publication in the *JOURNAL OF FORESTRY* which constitutionally is necessary.

Four weeks after the publication of this list a sufficient number of copies is made for each member of the Executive Council. In this manner each member can vote direct. (From our first attempt at this, which was used on the October list, we figure that the time will be cut about three months.)

A tabulation of votes will be kept in the office which will enable us to know at any point the status of an application.

When an applicant is elected, notice is sent to the Section as well as to him. If he is not elected, notice will be sent only to the Section and the reasons given. Where additional information will be of value, a second ballot will be prepared.

The following figures as to nominations during 1928 will give you an idea of the work involved in getting additional information, in voting, in writing letters of notification, etc.:

Members .....	177
Senior Members .....	66
Corresponding Members .....	
Associate Members .....	

All of these nominations have not been acted upon. Some of the applications are now before the Executive Council and will be voted on after the first of the year. Some of those already presented to the Executive Council have not been elected, in most cases because of lack of information in the application papers. We are trying to get additional information and prepare a second ballot.

In facilitating membership procedure the membership committees of the Sections can help considerably if they will give a little more attention to the fillings out of applications. Where applications do not meet the requirements of the Executive Council, it is necessary to write for further information and the application is delayed. If you will give us the history of the applicant in as much detail as possible it will help us considerably in voting intelligently. Under education should appear his entire schooling and if he has received degrees they should be noted.

In case of Senior Members it is necessary to distinguish between experience and achievement. Experience is a chronology of the applicant's technical and business experience. Achievement shows what he has done as a result of the opportunities growing out of his experience. Indicate how he has grown in judgment, knowledge, and personality; what constructive results he has accomplished; any



unusually rapid advancement; opportunities for advancement let go by in order to finish a piece of work he was especially interested in; or difficulties overcome which would have been too much for many other men.

The Executive Council as representative of the membership has a duty to discharge and that is to admit to membership only those who meet the high requirements of the Society. These requirements have been voted on by the entire membership and it is the duty of the Executive Council to see that the bars are not let down. There was a time when each member of the Executive Council knew every applicant personally. However the membership is growing and very few, if any, of the applicants are now known to the Council, personally. *They can, therefore, go only by the information that appears on the application forms*, and from the information on many of these it is impossible to pass the applicant although actually he may be fully qualified to belong to the Society.

One important thing is the interpretation of the Constitution by the Executive Council in regard to those eligible for membership. This is especially necessary now that we have a new constitution. Under the old constitution there were divergent opinions as to what constitutes "forest work." This came up especially with reference to men working for lumber companies. Some are employed as salesmen for lumber companies, some in the wood-preserving industry, etc. These men are generally graduate foresters and technically trained, but according to the present interpretation of the Executive Council, as outlined on the application form, they are not "actually

engaged in forest work," although they are often in line of promotion into key positions in the industry.

In summing up, there are several points that stand out rather clearly. One is the need of coöperation by the Sections by giving us the fullest information possible on the application form. This is absolutely essential, and if it does not appear we simply have to write for it and hold up the nomination. Another is the value of publishing a list of nominees in the JOURNAL. It will be interesting to have the expression of the membership on this point. In very few cases has the membership responded and it simply holds up the nomination for four weeks at least, and in the summer, when the JOURNAL is not published, at least six months. A list of nominees is published in the JOURNAL for the purpose of obtaining information on those nominated for membership. This policy is a good one but so far it has not met with much response. Here again the Executive Council can go only by the information supplied. It is especially the duty of every member to send in information on those nominated who should not be in the Society. I know of several admitted to membership who, if certain members had supplied the facts, would not have been elected. Go over this list carefully each month and let us have your comments. If you do not write we can only assume that you approve of the nominations. As you know, the letters are considered confidential for the use of the Executive Council. In this way we can get additional information and when necessary present a second ballot.

The Society's office at Washington is fully capable of carrying out the policies

of the Society, but it and the incoming Council need your coöperation.

B. A. CHANDLER,

*Member of Executive Council in  
Charge of Admissions.*



#### REPORT OF THE EDITORIAL BOARD

Since Mr. Zon's retirement last spring as Editor-in-Chief of the JOURNAL OF FORESTRY, his successor's time has been occupied chiefly with getting acquainted with the job. This has been no easy matter, since the amount of work involved, even with the relief afforded by the taking over of the strictly business end of the publication by the Secretary's office, is still far greater than is realized by the average reader.

One of the chief difficulties encountered during the past few months has been the scarcity of contributions. This is certainly not due to the lack of worthwhile material or to inability of members of the profession to present it in an interesting way, but probably in large part to the apparently general belief that the Journal has normally had more contributions than it could use. Whatever may have been the case in the past, this has certainly not been true in recent months. Prospective contributors should not, therefore, hesitate to send in articles, notes, or reviews for fear that they may not be welcome.

So far as character of material is concerned, the Editorial Board believes that the pages of the Journal should be open to articles dealing with any phase of forestry or closely allied fields. There is no disposition on the part of the Board, for example, to favor contributions dealing with silviculture as opposed to

utilization, or with research as opposed to administration. The function of the Journal is to record current developments and opinions in all branches of the profession. To do this adequately means that foresters of every age, position, and field of activity must express themselves freely. The JOURNAL OF FORESTRY constitutes an open forum through which facts and ideas can be brought to the attention of the entire profession, and will fulfill its mission only when used freely for this purpose.

In addition to the printing of original articles, the Journal aims to keep its readers in touch with developments and opinions recorded elsewhere through reviews of current literature. This is, in fact, one of its most important services, since the volume of forestry literature of general interest is now so great as to make it impossible for the average forester to read more than a small part of it, and even a specialist often has trouble in keeping up with material in his own field. The Journal can, therefore, help greatly to keep its readers abreast of the times by the inclusion of reviews which present the salient features of books, bulletins, periodical articles, and other current literature, and at the same time indicate the reviewer's appraisal of their value. Professor Schmitz of the Editorial Board has offered to work out a plan for the obtaining of reviews by which current literature can be covered more adequately than is now the case; and it is hoped that as a result of his efforts the department of reviews may be materially strengthened during the coming year. No system, however, can be perfect or all-inclusive, and reviews voluntarily submitted by Journal readers

will, therefore, continue to be welcome as they always have been in the past.

The Editorial Board is in some doubt as to whether "Notes" should consist primarily of news items concerning current happenings in the profession or of comments which amount virtually to short articles. In fact, the editor frequently finds himself perplexed as to whether a particular contribution should be classed as an article or a note, since there is undoubtedly a twilight zone in which opinions may well differ. In general, the decision is usually based on the length of the contribution, the amount of new information it contains, and the form of presentation.

On the whole the Editorial Board is inclined to emphasize the type of note containing new technical information or an expression of opinion as against the purely news item type of note. This is because of the belief that news of current happenings in the profession is already pretty well covered and made generally available to all interested through the *Forest Worker*, the *Forestry News Digest*, *American Forests* and *Forest Life*, and various district and state publications. There is, of course, a logical place in the *Journal* for a certain amount of material of this character dealing with the more important events, and particularly with those which are country-wide in their interest, but in general it seems probable that readers will get more out of notes of the other class. These may well contain information and points of view which hardly justify a formal article but which are, nevertheless, of real interest and value; and may, indeed, in many instances, have all the more appeal because of their very informality. Notes of this character, in-

cluding both information as to current developments in any phase of the profession and also notes on articles in the *Journal* or other current literature, are particularly desired.

With respect to "Society Affairs," the Editorial Board feels that this department is clearly one of general interest to all members of the Society and should, therefore, include reasonably full reports of the activities both of the Society as a whole and of its individual sections. To do this means, of course, the active coöperation of the sections in making available material as to their doings. News notes as to movements and activities of men sufficiently prominent to be generally known to the profession can well be included either here or under "Notes," but the Board is inclined to doubt the wisdom of including personal items as to individuals not generally known. The desirability of presenting full information as to the doings both of the main Society and its sections will, of course, increase as they become more and more active.

Attention should perhaps be called to the fact that increased dues have not meant any material expansion in the budget for the *Journal*, since the great bulk of the increase has been needed for other purposes. At the same time, the financial situation is such that it seems probable that more tabular material and more black and white cuts can be used from now on than has hitherto been possible. Apparently it will still be necessary, for the present, to economize on half tones, although these can ordinarily be included when their use is really essential for the adequate illustration of an important article.



An important forward step is the arrangement now in effect by which the Society shares equally with the authors of articles the cost of any number of separates up to one hundred. This arrangement is already being freely taken advantage of and will, it is hoped, result in meeting the needs of authors for copies of their own articles for private distribution in a manner satisfactory both to themselves and to the Society. There seems now to be no reason why any author should hesitate to submit contributions to the Journal on the ground that they cannot be properly illustrated or that separates cannot be obtained at reasonable cost.

In conclusion, the Editorial Board wishes to ask the active coöperation of every reader of the Journal, whether or not a member of the Society of American Foresters, in suggesting improvements in the present policy, make-up, or other respects, and also in making available material of value for publication in any of its several departments.

S. T. DANA,  
*Editor-in-Chief.*



#### SUMMARY OF REPORT OF THE COMMITTEE ON INDUSTRIAL FORESTRY

This is a progress report on an inquiry, not a formal survey as indicated on the program. The work has been pushed about as fast as the ponderous machinery of a scattered committee less than a year old will allow. Some of the data reached the chairman on December 21, and he was unfortunately not able to secure the immediate help of other committee members, nor to devote his whole time for the past week to bringing the figures up to date. We have nothing

ready to give out to the public which will carry a picture of the real situation, but we have a going machine, with its task more than half completed and a mass of data on uniform blanks to be re-analyzed, checked with country-wide and industry-wide inquiries by other agencies, supplemented through further correspondence, and reviewed by all members of the committee.

This committee was directed first of all, as I interpreted its duty, to go after facts. This meant the discarding of generalities and hearsay. Its work so far has done this I believe to a remarkable extent. It has agreed upon the following definition of industrial forestry: "The conscious effort to grow timber crops commercially." This definition throws out at the start a lot of companies which are doing some timber growing by the grace of God or to keep their lands from being entirely unsalable. It throws out also some large acreages which are now under intensive study with a fine chance to be put to work soon at the timber growing business.

Farm forest lands have been excluded unless they were more than 1000 acres in extent, and used to grow timber for actual commercial use in quantity. Timbered lands, merely held in reserve and protected, have been largely excluded. I am not sure that this is right. The committee must decide when the tabulated and analyzed data can be studied by each member. A final report resulting from anything less will be almost worthless.

This is what we find so far, excluding California on which no acreage figures are available:

165 companies whose practices come under our definition of "industrial forestry."

8,550,000 acres of virgin and second growth timber under industrial forestry management to stay.

46 additional companies intensively studying 2,309,238 acres with open minds and hoping to put them under industrial forestry management.

Included in the 165 companies mentioned above are:

29 companies cutting conservatively and using the diameter limit idea.

12 companies leaving seed trees.

7 companies logging selectively.

6 companies using special care to protect advance reproduction.

26 companies making thinnings or release cuttings.

39 companies using foresters as foresters in their operations.

13 companies using consulting foresters.

6 companies making growth studies or doing other silvicultural research on their lands.

41 companies planting at a rate which exceeds mere experimentation.

32 companies spending appreciable sums for insect or disease control.

28 companies easing up on their turpentining methods.

10 companies carefully classifying their lands.

SHIRLEY W. ALLEN,  
*Chairman.*



#### REPORT OF COMMITTEE ON RESEARCH FELLOWSHIPS AND EDUCATIONAL SURVEY

1924. Colonel William B. Greeley presented a paper before the National Academy of Sciences urging its support of the forestry movement.

1925. In response to the Academy's request, Colonel Greeley made certain

specific proposals for the Academy's participation in the forestry movement, including the establishment of research fellowships.

The Academy's Special Committee on Forestry Problems, created in response to Colonel Greeley's proposal, reported that "there is urgent national need for the clearer definition and active prosecution of a sound forestry policy," and that such a policy "must be based upon researches in the fundamentals of science underlying forestry . . . and recognizing certain aspects of economics."

Through the generosity of the General Education Board, the Committee undertook a survey of forest research and of forestry education as it bears on research, both in the United States and in Europe. The research survey was conducted by I. W. Bailey and H. A. Spoehr, the educational survey by Dean Graves.

#### RESEARCH FELLOWSHIPS

October 7, 1927. The Committee on Forest Research of the National Academy of Sciences met in Washington and conferred with a group of foresters, including H. S. Graves, W. B. Greeley, R. Y. Stuart, I. W. Bailey, S. T. Dana, Aldo Leopold, and Ward Shepard concerning further steps and plans for research fellowships. At the request of Committee, the following Committee of the Society was appointed to prepare a plan for fellowships:

R. Y. Stuart, *Ex officio*, *Chairman*,  
E. H. Clapp,  
R. S. Hosmer,  
S. T. Dana,  
Barrington Moore,  
D. T. Mason,  
Ward Shepard.

The Committee was assisted throughout by Dean Graves and Dr. Bailey.

*December 16-17, 1927.* The Society of American Foresters at its annual meeting in San Francisco voted "to endorse the program for fellowships for the encouragement of training in forest research, prepared by the Special Committee of the Society."

*January 28, 1928.* The final draft of the report on research fellowships was submitted to Dr. L. R. Jones, Chairman of the Forestry Committee of the National Academy of Sciences. Copies were also sent to other members of the Committee and to members of the General Education Board.

Consideration of the report was delayed, first, for determination by the General Education Board whether it would broaden its policy of scientific research to include agriculture and forestry, and, second, by an administrative reorganization of the General Education Board.

#### SURVEY OF FORESTRY EDUCATION

At the time of submitting his report on forest education to the National Academy, Colonel Graves pointed out the need of making more intensive investigations of certain phases of the educational problem. Colonel Graves was primarily instrumental in drawing up the proposal for this further survey but was assisted by the Committee on Research Fellowships. The plan was outlined by Dean Graves at the Conference of Forest Schools on December 15, 1927, and was approved by the Society at the same time in the following terms: "Voted: To record the approval of this meeting of the plan for a further study of forest education as outlined by Dean

Graves and to request the President of the Society to take such steps as may be necessary in securing financial support for such study and to organize an appropriate committee for the investigation in case it can be financed."

*July 23, 1928.* The final draft of the proposal for a survey was transmitted by Dean Graves to Dr. F. P. Keppel of the Carnegie Corporation.

*November 22, 1928.* The Board of Trustees of the Carnegie Corporation voted as follows:

"*Resolved*, That, from the balance available for appropriation, the sum of \$30,000, or as much thereof as may be necessary, be, and it hereby is, appropriated to the Society of American Foresters for a constructive study of the program for forestry education in America provided a satisfactory plan of operation is submitted to the Corporation."

*December 17, 1928.* President Butler accepted the grant of the Carnegie Corporation and outlined a general plan of operation.

R. Y. STUART,  
*Chairman.*



#### REPORT OF COMMITTEE ON HISTORY

The Committee on History is, from its nature, one that reports progress intermittently. Its purpose is to accumulate and safeguard material of historical value that has reference to the development of forestry in the United States.

In 1928, the only direct accession has been certain manuscript notes belonging to the late Dr. B. E. Fernow, but negotiations are now in progress that look to the transfer to the Society of the file of the National Forestry Program Com-



mittee, by the chairman of that body, Mr. R. S. Kellogg.

It is the belief of the undersigned that the Committee on History should be continued as one of the permanent committees of the Society.

Although officially having no connection with this committee, note may well be made here of a very important recent contribution to American forest history, the volume by Mr. Jenks Cameron in the series of monographs of the Institute of Government Research, entitled "The Development of Governmental Forest Control in the United States." Mr. Cameron, in vigorous and most readable style, traces the part that the forest has played in the development of our nation. His book is one that should be read by every American forester.

RALPH S. HOSMER,  
*Chairman.*



#### NORTH PACIFIC SECTION FAVORS UNIVERSAL YIELD TAX FOR OREGON

At the November 27 meeting of the North Pacific Section, Sinclair Wilson, president of the Linnton (Oregon) Bank, an Oregon State College Forestry School graduate, read a paper on "The Economic Phases of Forestry Legislation from a Banker's Standpoint," dealing with proposed immature forest tax legislation in the State of Oregon.<sup>1</sup> Some of the main recommendations were that the proposed act should not apply to mature timber, but that all reforesting lands within the state should automatically come under it with a flat land tax of 5 cents per acre per year and a 10 per cent yield tax on all products held to be di-

rectly derived from the forest. Mr. Wilson's paper caused some interesting discussion, after which on motion of Mr. Guthrie the section expressed the opinion that the general provisions of the reforesting land tax, as laid down in this paper, should be the basis for proposed reforestation legislation in Oregon.

Thirty were present at the meeting of whom 23 were members and seven were prospective members whose applications have already been sent to the Society for consideration. Members attended from Corvallis, Olympia, Oregon City, in addition to those resident in Portland.

E. J. HANZLIK,  
*Secretary-Treasurer.*



#### NORTHERN ROCKY MOUNTAIN SECTION HAS GOOD YEAR

The Northern Rocky Mountain Section now has a membership of 130 not including the candidates recommended by the membership committee this year. This number includes 38 senior members, also exclusive of the group recommend for advancement. Of the total number of members, 52 are in western Montana (36 in Missoula), 51 are in northern Idaho or eastern Washington, and 25 are in eastern Montana and North Dakota. There are 23 associate members of the Section. Seven names were dropped from our lists during the year for failure to accept membership or for nonpayment of dues. All of those dropped on account of dues were behind for two years.

The Section held nine meetings in Missoula last winter, one in Spokane, and one in Moscow. The attendance at

<sup>1</sup> See page 38 of this issue of the JOURNAL OF FORESTRY.

these meetings averaged 41. M. H. Wolff and C. N. Whitney have a notable record in attendance, neither having missed a Missoula meeting in two years.

A definite effort was made in 1928 to bring non-Missoula members into active participation in Society affairs. The meetings in Spokane and Moscow have been mentioned. Papers or contributions were obtained also from Messrs. Rush, Billings, Brooks, Kempff, Hartwell, and Fickes. Invitations for papers have been sent to Messrs. Cobb, Burton, Wilson, and Sowder for this fall. A meeting in Kalispell is being considered by some of the members there. At the Spokane and Moscow meetings, papers were prepared by C. L. Billings, E. E. Hubert, C. C. Strong, W. W. White, M. Bradner, and W. D. Humiston.

A large proportion of the local men took part in the work of the Section through committee assignments, or in connection with some part of the program. Eighteen papers covering various forestry subjects were presented during the winter. One of these by Neff appeared in the JOURNAL for May. Two others by Lommasson and Bradner may yet be put in shape for publication in the JOURNAL. Mr. Rush's paper concerning the elk problem was submitted to American Forests and Forest Life. Briefs of most of these talks were prepared by reporters selected by the Executive Committee and the briefs, together with minutes of the meetings, were mailed to all out-of-town members. In addition to these articles, Mr. Flint submitted a fire problem discussion which was printed in the May JOURNAL and Mr. Ramskill has prepared an article on wood preservation.

During the year some ten letters were sent out containing about 57 pages of

single-spaced typewritten material. Forest Service stenographers have contributed a great deal of work during slack times and the project has called for a considerable amount of work on the part of the secretary and several men assigned as reporters.

Six members of the Northern Rocky Mountain Section attended the annual meeting of the Society in San Francisco in December. These were Gisborne, Koch, Morrell, Shoemaker, Spaulding, and Miller. Each reported upon some phase of the meeting at the first January meeting of the Section.

Several special affairs during the winter should be mentioned. On February 6, Dr. C. A. Schenck was a dinner guest of the Section and spoke briefly upon the obstacles to private forestry in the United States. On February 26, a joint meeting with the Missoula Hoo Hoo Club was held during which the regular Society program was put on. On March 5, D. T. Mason spoke upon the subject of Sustained Yield Management. On March 31, special dinners were arranged at Missoula and Moscow in honor of Elers Koch and F. G. Miller, who are completing 25 years in the profession of forestry.

Resolutions were passed favoring the McSweeney-McNary Bill and favoring legislation to improve the elk situation near Yellowstone Park. These matters were likewise recommended for favorable consideration to Senators Walsh and Wheeler, and the former to various forestry bodies in the region.

The following changes in the Section By-Laws have been adopted:

(a) Enlarge the executive committee (formerly three) by addition of a vice-chairman and one other member living away from Missoula.

(b) Require ballot of entire membership for elections, for changes in By-Laws, and for decisions on important matters affecting the Section.

R. N. CUNNINGHAM,

*Secretary.*



#### WASHINGTON SECTION CONSIDERS DEFORESTED AMERICA

Thursday, December 20, 1928, witnessed a live meeting of the Washington Section of the Society of American Foresters at the Cosmos Club. Major Geo. P. Ahern reviewed his recent publication entitled "Deforested America," which formed the basis of the evening's discussion.

"Foresters and lumbermen," the major declared, "as yet have offered nothing worth while to stem the tide of forest devastation. This appalling forest situation has been known to the Forest Service for many years. It is menacing our national prosperity. The problem calls for aggressive leadership by the men our country holds responsible for the conservation of this great natural resource. The officials at Washington have fallen down on the job in failing to get the real facts to the people. Past experience has clearly demonstrated that this cannot be accomplished through the medium of dry Government bulletins, but only through the front pages of metropolitan dailies."

E. N. Munns discussed "Regulation, Coöperation, or Subsidy" based on "Deforested America" as published by Major Ahern. He reviewed the history of forest devastation, pointing to the ever-increasing rate of forest devastation taking place in the United States with little or no protection of the land after the logger leaves it. Mr. Munns apparently

does not think much of "big stick" regulation or the results to be attained by coöperation, but rather he would offer an appeal with regulations and a subsidy of some sort.

He suggested that a tax might be placed on the forest product, such as a surcharge collected from the shipper as the product is shipped from the mill, the money collected to be turned over to a national board who would apportion the funds to the states entitled. Some Federal legislation would be needed, including the appointment of a federal board or boards with power to regulate forestry practice, to collect the tax, and to see that the money is returned ultimately to be spent in the forest. The idea would be to abolish taxes until the product was marketed. General rules covering the whole country cannot be laid down as to the practice of forestry; you cannot legislate biological behavior. In short, the same silvicultural rule or practice cannot well be followed in all forest regions. Mr. Munns suggests that the Society of American Foresters unite with the progressive elements in the lumber industry and work out a scheme. It was suggested that the President of the United States call a conference. Mr. Munn's idea follows somewhat closely the plan now successfully practiced in Sweden.

R. Y. Stuart stated that the present forest problem should be approached with an open mind. The Forest Service is not doing enough, he recognized; but the public is informed of the situation as evidenced by the numerous state forest services now in existence. Equitable regulations might be worked out; the proposition is worth while. A national conference as Mr. Munns suggested would help. The President of the United



States would be the one to call such a conference.

Ward Shepard cited the great cry about agricultural relief—an Agricultural Relief Commission has been formed. Why not a Forest Relief Commission for this country? The problem needs the best brains and leadership in the country. He suggested that the Society of American Foresters appoint a committee to study regulations for application to the present needs.

Gifford Pinchot reviewed early days in forestry work in this country. He emphasized the fact that brains and courage are needed to develop plans for forestry practice. Now is the time to act. The lumbermen have gained the leadership. It is high time that foresters be alive to the real issue and inform the people of the true conditions. It is a national problem; not one for each to handle as he sees fit.

Mr. Roberts, of the National City Bank of New York City, stated that the banks are interested in forestry, in fact in all natural resources, and are willing to share in a program that will be helpful to all the people of the nation.

H. H. Bennett, of the Bureau of Soils, painted an alarming picture of soil erosion now taking place in this country. Forty-six million acres of land have been denuded by erosion. The fertile top soil has been washed away. It requires centuries for nature to form an inch of fertile soil. Many millions of acres of soil have been stirred up and eroded which should have been left for forest growth. There are many millions of acres of land now barren that should be put to tree growth as a protection from the great menace of erosion. The nation's

wealth is rapidly going out to sea. Soil erosion is another problem that all foresters should earnestly consider at an early date.

Barrington Moore moved that the Washington Section recommend to the Society of American Foresters the appointment of a committee to study the present forest situation and submit plans for its solution. This motion was seconded by Mr. Collingwood and was carried.

A. B. Hastings took issue with Mr. Munns regarding the progress made under the Clarke-McNary Act. He stated that considerable had been accomplished considering the length of time that the act has been a law and that it was too short a time to criticise the results thus far attained or possibilities thereof.

Axel H. Oxholm explained the Swedish system of levying a 3 per cent tax on felled timber, one-third of which went to the federal government and two-thirds for forest activities, planting, protection, etc., to insure the continuous practice of forestry. The Swedish Forest Board that administers the law under which the private interests must operate consists of a state forester, two lumbermen, and one federal official. Mr. Oxholm believes that a yield tax can best be levied on the product at time of sale.

With reference to forest utilization in the United States, to which Mr. Oxholm has given much study, he stated that 28,000 cars of wood went to waste in Virginia alone the past year; a train long enough to reach from Washington to New York City.

MORGAN PRYSE,  
*Secretary.*

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